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COUNTY OF RIVERSIDE

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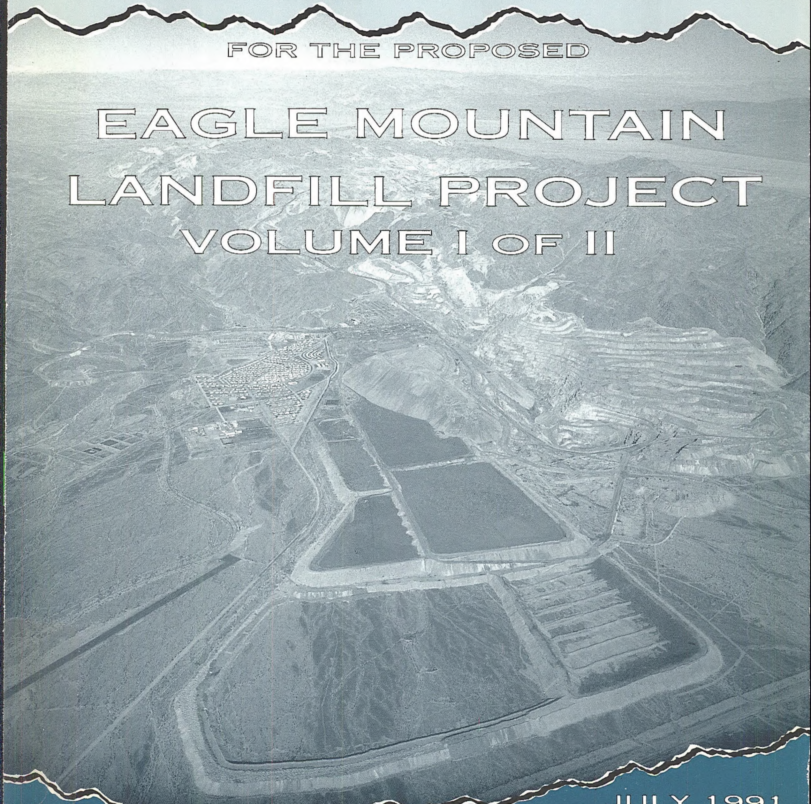
Planning Department

APPENDIXES
TO THE
DRAFT
ENVIRONMENTAL IMPACT STATEMENT
ENVIRONMENTAL IMPACT REPORT



FOR THE PROPOSED

EAGLE MOUNTAIN LANDFILL PROJECT
VOLUME I OF II

JULY 1991

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Appendixes to the Draft Environmental Impact Statement/ Environmental Impact Report for the Eagle Mountain Landfill Project (Volume I of II)

Prepared for

MINE RECLAMATION CORPORATION
3179 TEMPLE AVENUE, SUITE 290
POMONA, CA 91768

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Prepared by

RECON
Regional Environmental Consultants
7460 Mission Valley Road, San Diego, CA 92108 (619) 542-1611

RECON Number 2100E
June 10, 1991

This document printed on recycled paper.

Appendixes Volume I

A: Notice of Preparation Materials & List of Persons Receiving Draft EIS/EIR
B: Project Description
C: Water Quality Data
D: Draft Traffic Analysis

APPENDIX A

Notices of Preparation and Intent

CORRECTED
AGENCY NOTICE OF PREPARATION
OF
AN ENVIRONMENTAL IMPACT REPORT

DATE: August 15, 1989

TO:

PROJECT CASE NO./TITLE:

Specific Plan No. 252, Zone Change No. 5499, Comprehensive General Plan Amendment No. 209/Eagle Mountain Project.

PROJECT SPONSOR:

Mine Reclamation Corporation
550 N. Brand Blvd. 8th Floor
Glendale, CA. 91203

PROJECT DESCRIPTION:

A proposed regional Class III solid waste disposal site (sanitary landfill) combined with the storage, fabrication and sales of recyclable material; the repair and maintenance of railroad equipment, facilities, and rail cars used to transport waste to the site, landfill gas recovery and utilization, composting, leachate processing, renewal of mining operations, the continuance and/or expansion of existing residential and commercial land uses, and the continuance and/or expansion of the Return-to-Custody facility.

Collection of waste material is to occur primarily within the Los Angeles metropolitan area, at waste transfer station locations not yet determined; with other possible locations situated in the Southern California region. Transport of waste material is proposed to occur along various Southern Pacific rail routes throughout Southern California, and will be dependant on the location of the transfer station. It is anticipated that the disposal site, when operating at maximum operational capacity, will receive six (6) trains daily.

PROJECT LOCATION:

Portions of the Western and Central Chuckwalla Zoning Area located approximately 10 miles northwest of the community of Desert Center and approximately 1/4 mile south of Joshua Tree National Monument. The site covers, approximately 9,800 acres within the Eagle Mountains, and was previously known as the Kaiser Eagle Mountain Iron Mine.

> The project proposes to establish several waste transfer stations within the Los Angeles metropolitan area, and possibly others in the Southern California region. Because specific locations have not yet been established, this project will not specifically address the waste transfer stations. Furthermore, any contemplated transfer stations will require review and approval by that individual city or county which has jurisdiction over that particular station's location. It is proposed that transport of the waste material will be via Southern Pacific rail routes throughout Southern California. At this time it is infeasible to determine which rail routes will be used, since the location of the transfer stations have not been finalized, and additional stations could be added later.

Pursuant to the Riverside County Rules to Implement the California Environmental Quality Act, notice is given to responsible and interested agencies, that the Riverside County Planning Department plans to oversee the preparation of an Environmental Impact Report for the project. The purpose of this notice is to solicit guidance from your agency as to the scope and content of the environmental information to be included in the EIR. Information in that regard should be submitted to this office as soon as possible, but not later that 30 days after receiving this notice.

Attached is a copy of the issues to be included in the draft EIR. If you have any questions, please contact David Mares, Project Planner, at (714) 787-2140.

Very truly yours,

RIVERSIDE COUNTY PLANNING DEPARTMENT
Roger S. Streeter, Planning Director

David Mares
David Mares, Planner III

LIST OF AGENCIES FOR N.O.P. FOR SP 252 (AGENCY FORMAT)

……

1 CENICEROS, KAY -4th DIST. SUPERVISOR

2 BEADLING, ELIZABETH- 4th DIST. PLANNING COMMISSIONER

3 STATE CLEARINGHOUSE
4 STATE AIR RESOURCES BOARD
5 STATE DEPT. OF FISH & GAME-LONG BEACH OFFICE
6 STATE DEPT. OF HEALTH SERVICES
7 STATE DEPT. OF CONSERVATION
8 HIGHWAY PATROL
9 STATE OFFICE OF PLANNING AND RESEARCH
10 STATE DEPT. OF CORRECTIONS
11 STATE DEPT. OF RESOURCES
12 STATE DIVISION OF MINES AND GEOLOGY
13 STATE LAND RESOURCES PROTECTION UNIT
14 STATE LANDS COMMISSION-SACRAMENTO OFFICE
15 STATE LANDS COMMISSION-LONG BEACH OFFICE, G. PELKA
16 STATE PUBLIC UTILITIES COMMISSION
17 STATE RECLAMATION BOARD
18 CALIFORNIA WASTE MANAGEMENT BOARD
19 CALTRANS-DISTRICT #11
20 CALTRANS-DISTRICT #8

21 REGIONAL WATER QUALITY CONTROL BOARD #7(COLORADO)
22 COACHELLA VALLEY ASSOC. OF GOVTS. (CVAG)
23 SO. COAST AIR QUALITY MANAGEMENT DISTRICT

24 GROFIT
25 RIV. CO. ADMINISTRATION OFFICE
26 RIV. CO. ASSESSORS OFFICE
27 RIV. CO. BUILDING & SAFETY DEPT.
28 RIV. CO. DEPT. OF ECONOMIC AND COMM. DEV.
29 RIV. CO. FIRE DEPT.-PLANNING & ENGINEERING
30 RIV. CO. FLOOD CONTROL
31 RIV. CO. HEALTH DEPT.
32 RIV. CO. OPEN SPACE RESOURCE COMMISSION
33 RIV. CO. PARKS DEPT.
34 RIV. CO. PUBLIC LIBRARY
35 RIV. CO. ROAD DEPT.
36 RIV. CO. SHERIFF DEPT.
37 RIV. CO. WASTE MANAGEMENT DEPT.

38 U.S. BUREAU OF LAND MANAGEMENT
39 U.S. BUREAU OF MINES (div. of dept. of interior)
40 U.S. DEPT. OF FISH AND WILDLIFE
41 U.S. DEPT. OF FOOD AND AGRICULTURE
42 U.S. DEPT. OF THE INTERIOR
43 U.S. POSTAL SERVICE
44 U.S. SOIL CONSERVATION DIST. COACHELLA VALLEY
45 ENVIRONMENTAL PROTECTION AGENCY
46 U.S. DEPT. OF THE ARMY

.....COUNTY OF SAN DIEGO
47 CITY OF CHULA VISTA
48 CITY OF EL CAJON
49 CITY OF LA MESA
50 CITY OF LEMON GROVE
51 CITY OF NATIONAL CITY
52 CITY OF SAN DIEGO

.....COUNTY OF LOS ANGELES
53 CITY OF ALHAMBRA
54 CITY OF ARTESIA
55 CITY OF AZUSA
56 CITY OF BALDWIN PARK
57 CITY OF BELL
58 CITY OF BELL GARDENS
59 CITY OF BELLFLOWER
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82 CITY OF LOS ANGELES
83 CITY OF LYNWOOD
84 CITY OF MAYWOOD
85 CITY OF MONTEBELLO
86 CITY OF MONTEREY PARK
87 CITY OF NORWALK
88 CITY OF PALMDALE
89 CITY OF PARAMOUNT
90 CITY OF PICO RIVERA
91 CITY OF POMONA
92 CITY OF REDONDO BEACH
93 CITY OF ROSEMEAD
94 CITY OF SAN DIMAS
95 CITY OF SAN FERNANDO
96 CITY OF SAN GABRIEL
97 CITY OF SANTA CLARITA
98 CITY OF SANTA FE SPRINGS
99 CITY OF SANTA MONICA
100 CITY OF SIGNAL HILL
101 CITY OF SOUTH GATE
102 CITY OF TEMPLE CITY
103 CITY OF TORRANCE
104 CITY OF VERNON
105 CITY OF WALNUT
106 CITY OF WEST COVINA
107 CITY OF WHITTIER

.....COUNTY OF SAN BERNARDINO

108 CITY OF CHINO
109 CITY OF COLTON
110 CITY OF FONTANA
111 CITY OF GRAND TERRACE
112 CITY OF LOMA LIEDA
113 CITY OF MONTCLAIR
114 CITY OF ONTARIO
115 CITY OF RANCHO CUCAMONGA
116 CITY OF REDLANDS
117 CITY OF RIALTO
118 CITY OF SAN BERNARDINO
119 CITY OF UPLAND

.....COUNTY OF ORANGE

120 CITY OF ANAHEIM
121 CITY OF BREA
122 CITY OF BUENA PARK
123 CITY OF COSTA MESA
124 CITY OF CYPRESS
125 CITY OF FULLERTON
126 CITY OF GARDEN GROVE
127 CITY OF HUNTINGTON BEACH
128 CITY OF LA HABRA
129 CITY OF LOS ALAMITOS
130 CITY OF ORANGE
131 CITY OF SANTA ANA
132 CITY OF STANTON
133 CITY OF TUSTIN
134 CITY OF VILLA PARK
135 CITY OF WESTMINSTER

.....COUNTY OF IMPERIAL

136 CITY OF BRAWLEY
137 CITY OF CALIPATRIA
138 CITY OF EL CENTRO
139 CITY OF IMPERIAL

.....COUNTY OF RIVERSIDE

140 CITY OF BANNING
141 CITY OF BEAUMONT
142 CITY OF CATHEDRAL CITY
143 CITY OF COACHELLA
144 CITY OF INDIO
145 CITY OF PALM DESERT
146 CITY OF PALM SPRINGS
147 CITY OF RANCHO MIRAGE
148 CITY OF RIVERSIDE
149 DESERT CENTER UNIFIED SCHOOL DISTRICT
150 AGUA CALIENTE TRIBAL OFFICE
151 AUDOBON SOCIETY
152 CARMICHAEL, S
153 COACHELLA VALLEY WATER DISTRICT
154 COUNTY SERVICE AREA #51
155 DESERT WATER AGENCY
156 GENERAL TELEPHONE
157 HARLOW, DAVE H.-EAST AREA PLANNING COUNCIL
158 JOSHUA TREE NATIONAL MONUMENT
159 LAKE TAMARISK BRANCH PUBLIC LIBRARY
160 METROPOLITAN WATER DISTRICT
161 MISSION SPRINGS WATER DISTRICT
162 SAN BERNARDINO MUSUEM-B. REYNOLDS (PALEO)
163 SIERRA CLUB-SAN GORGONIO CHAPTER
164 SO. CAL. EDISON
165 SO. CAL. GAS COMPANY
166 SO. COACHELLA VALLEY COMMUNITY SERVICES DIST.
167 SOUTHERN PACIFIC RAILROAD
168 THE NATURE CONSERVANCY
169 UCR-ARCHAEOLOGICAL RESEARCH UNIT, D. McCARTHY
170 UCR-LIFE SCIENCE DEPT. W.W. MAYHEW
171 COUNTY OF SAN BERNARDINO
172 COUNTY OF LOS ANGELES
173 COUNTY OF IMPERIAL
174 COUNTY OF ORANGE
175 COUNTY OF SAN DIEGO

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS FOR SP 252

Earth: Seismic and groundshaking impacts. Slope stability and potential rockfall impacts. Mineral resource preservation.

Air: Mobile and stationary source emissions. Odors emanating from the landfill site. Cumulative local and regional effects.

Water: Flood and storm drainage. Surface water quality. Groundwater quality and quantity. Availability of potable water and sewer capacity.

Biotic: Description of native fauna and flora species and habitats. Potential introduction of exotic species and potential conflicts with native species.

Noise: Mobile noise sources from rail and highway. Stationary noise sources from mining and recycling activities. Impacts on noise sensitive localities.

Population: Potential increases in local population. Growth inducing effects on surrounding communities and public facilities.

Transportation/Circulation: Vehicle and rail trip generation. Rail scheduling and coordination issues. Cumulative impacts.

Public Services: Increase in demand for, and cumulative impacts on public services including, but not limited to, fire protection, law enforcement, road maintenance, and emergency medical services.

Energy Conservation: Reclamation and recycling of recyclable materials. Use of water-saving and electricity-saving devices in residences and commercial uses.

Utilities: Increase in demand for, and cumulative impacts on utilities including, but not limited to, electrical, water, sewer, telephone, and natural gas.

Hazardous Waste: Methods proposed to restrict and prohibit disposal of hazardous substances, materials and waste. Methods of detection of the presence of hazardous materials and emergency response capability.

Public Health/Safety: Methods proposed for temporary off site storage of waste materials, in the event of disaster or catastrophe. Subsurface gas migration, subsurface fires. Control of vectors and disease. Rail accident potential, leachate spill, methane explosion and fire.

enhance relationships between local consumers and FDA's district offices, and to contribute to the agency's policymaking decisions on vital issues.

Dated: November 7, 1989.

Ronald G. Chesemore,

Acting Associate Commissioner for Regulatory Affairs.

[FR Doc. 89-26774 Filed 11-14-89; 8:45 am]

BILLING CODE 4160-01-M

Health Care Financing Administration

Statement of Organization, Functions, and Delegations of Authority

Part F. of the Statement of Organization, Functions, and Delegations of Authority for the Department of Health and Human Services, Health Care Financing Administration (HCFA), (Federal Register, Vol. 53, No. 45, pg. 7403, dated March 9, 1988) is amended to reflect the addition of responsibility for the Office of Inspector General (OIG) audit resolution functions to the Management Planning and Analysis Staff (MPAS), Office of Budget and Administration (OBA), in the Office of the Associate Administrator for Management.

The specific amendment to Part F. is described below:

- Section FH.20.A.4, Management Planning and Analysis Staff (FHA-1) is amended by deleting the functional statement in its entirety and replacing it with the following functional statement:

4. Management Planning and Analysis Staff (FHA-1)

Assists and advises the Director, Office of Budget and Administration (OBA) and other OBA managers in management analysis activities. Provides Agency-wide services, policy, planning, and control programs including: workplanning, management analysis, quality/productivity improvement, Privacy Act responsibilities, the internal control program, Office of Inspector General (OIG) audit resolution functions, advisory and assistance services certification, contracting out of commercial and industrial activities, the administrative issuances system, and memoranda of understanding and interagency agreements. Develops HCFA Policy in these areas and assures the implementation of these policies throughout HCFA. Conducts special studies and analyses concerning Agency-wide and cross-cutting ORA issues and other broad based administrative issues.

Dated: November 3, 1989.

Robert A. Streimer,

Acting Associate Administrator for Management.

[FR Doc. 89-26823 Filed 11-14-89 8:45 am]

BILLING CODE 4120-01-M

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[CA-060-00-5440-10-ZBBB]

Proposed Right-of-Way and Land Exchange for Proposed Eagle Mountain Mine Waste Disposal Facility

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of intent.

SUMMARY: Notice is hereby given that the Bureau of Land Management (BLM) and the County of Riverside will prepare a joint Federal-County Environmental Impact Report/Statement (EIR/EIS) for a proposed right-of-way and land exchange for Mine Reclamation Corporation's (MRC) proposed waste disposal facility at the Eagle Mountain Mine.

MRC has proposed to utilize Kaiser Steel Resources, Inc.'s (KSR) Eagle Mountain Mine site in Riverside County, California, and an associated railroad spur for a Class III waste disposal facility. The site would also be used for the storage of recyclable materials, rail and equipment maintenance, landfill gas recovery and utilization, flare/energy recovery, leachate processing, wastewater treatment, the continuance and/or expansion of the existing residential and commercial land uses, and the expansion of the Return-to-Custody facility (California Department of Corrections).

DATES: For Scoping Meetings and Comments: Public scoping meetings will be held on the following dates: 7 p.m. on Wednesday, December 6, 1989, at Lake Tamarisk Recreation Center, 26251 Parkview Dr., Desert Center, CA 92239 (619-227-3203); 7 p.m. Thursday, December 7, 1989, at City Hall Palm Desert, 73510 Fred Waring Dr., Palm Desert, CA 92260 (619-346-0611); and 9:00 a.m. Monday, December 11, 1989, at Southern California Association of Governments, 818 W. 7th St., 12th Floor, Conference Room, Los Angeles, CA 90017 (213-236-1800).

Comments are being requested to help identify significant issues or concerns related to the proposed action, to determine the scope of the issues (including alternatives) that need to be analyzed, and to identify and eliminate from detailed study the issues which are not significant. All comments recommending that the EIR/EIS address specific environmental issues should contain supporting documentation and rational. Written comments must be filed on or before December 20, 1989, reference BLM CA-25594, and should be addressed to Marianne Wetzel, BLM, Palm Springs-South Coast Resource Area, 400 S. Farrell Dr., Suite B-205, Palm Springs, CA 92262.

SUPPLEMENTARY INFORMATION: The project site is the Eagle Mountain inactive, open iron mine located in the Eagle Mountains in eastern Riverside County. The site is owned by KSR and occupies approximately 9,800 acres. The site is located approximately 10 miles north of Desert Center, approximately 170 miles east of Los Angles, and approximately 50 miles west of the Arizona border.

MRC has leased approximately 8,300 acres of the Eagle Mountain Mine and the 52-mile private railroad from KSR for a period of 100 years. MRC proposes to use approximately 5,300 acres of the leased area as a regional site for retrievable storage and disposal of nonharzardous municipal solid waste generated in Southern California. Of the 5,300 acres, about 2,250 acres would be for the landfill itself. Before refuse is delivered to the project site, it will be processed through transfer stations which will be located as near as practicable to the sources of refuse production. At the transfer stations, which will not be owned or operated by MRC, refuse will be screened for harzardous substances, sorted for recyclables, compacted, and loaded into closed shipping containers. MRC plans to have the landfill operating in 1991.

Initially, MRC expects to receive 4,000 tons of waste per day. This waste volume is expected to increases to a maximum of 20,000 tons per day, with 16,000 tons per day being transported by rail and a maximum of 4,000 tons per day being transported by road. The waste would be place in the existing, open mining pits at Eagle Mountain Mine. The estimated capacity of the proposed landfill is in excess of 500 million tons and have a minimum life of 100 years.

The project would be developed to meet stringent state and federal regulations for municipal solid waste landfills. The entire area underlying the refuse would be lined with on-site clay-like materials. At no time would refuse be placed upon or against unlined native material. Other pollution control systems to be constructed would include: ground water monitoring wells, leachate collection and treatment systems, drainage systems, and landfill gas control and recovery systems.

A portion of the proposed project area including a portion of the railroad was authorized by the BLM for mining use only by KSR. Therefore, owing to the change of use, KSR is applying for the conversion of a legislatively approved railroad right-or-way to a right-of-way grant pursuant to the Federal Land Policy and Management Act, for rail and road access to the site. Approximately 33 miles of the rail system which runs from Ferrum to the mine site is located on public land.

An exchange of land between the BLM and KSR would also be necessary to place the entire landfill site under private ownership and thereby, would allow KSR to lease the land to MRC for the landfill use. In the exchange, BLM would be acquiring lands which would benefit their biological, cultural, scenic, and other resource management programs. The exchange would involve approximately 2,800 acres of public land, much of which is under unpatented mining claims and mill site claims to KSR.

Potential issues include, but are not limited to, air quality, social and economic impacts, ground and surface water quality, desert tortoise, bighorn sheep, cultural or historical resources, and recreation and wilderness values.

FOR ADDITIONAL INFORMATION CONTACT: Marianne Wetzel, Palm Springs-South Coast Resource Area, 400 S. Farrell Drive, Suite B–205, Palm Springs, California 92262.

Dated: November 8, 1989.

Ron Yokota,

Acting District Manager, California Desert District.

[FR Doc. 89–26790 Filed 11–14–89; 8:45 am]

BILLING CODE 4310-40-M

[ID-943-90-4214-11; I-2037]

Proposed Continuation of Withdrawal; Idaho

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice.

SUMMARY: The U.S. Forest Service, Department of Agriculture, proposes that a withdrawal of 39.31 acres for the Cunningham Bar Recreation Area in the Salmon National Forest continue for an additional 20 years. The land is now being used as a recreation site. The land would remain closed to surface entry and mining. The land has been and will remain closed to mineral leasing by an overlapping withdrawal.

EFFECTIVE DATE: February 13, 1990.

FOR FURTHER INFORMATION CONTACT: Sally Carpenter, Idaho State Office, BLM, 3380 Americana Terrace, Bosie, Idaho 83706, 208–334–1720.

The U.S. Forest Service proposes that the existing land withdrawal made by Public Land Order No. 4624, be continued for a period of 20 years pursuant to Section 204 of the Federal Land Policy and Management Act of 1976, 90 Stat. 2751; 43 U.S.C. 1714. The land is described as follows:

Boise Meridian

T. 23 N., R. 14 E.

sec. 1, lots 3, 7, and that portion of lot 4 east of the centerline of Wheat Creek.

The area described contains 39.31 acres in Idaho County.

The withdrawal is essential for protection of substantial capital improvements on the Recreation Site. The withdrawal closed the described land to surface entry and mining but not to mineral leasing. However, the land has been and will remain closed to mineral leasing by an overlapping withdrawal. No change in the segregative effect or use of the land is proposed by this action.

For a period of 90 days from the date of publication of this notice, all persons who wish to submit comments in connection with the proposed withdrawal continuation may present their views in writing to the Idaho State Director at the above address.

The authorized officer of the Bureau of Land Management will undertake such investigations as necessary to determine the existing and potential demand for the land and its resources. A report will also be prepared for consideration by the Secretary of the Interior, the President, and Congress, who will determine whether or not the withdrawal will be continued; and if so, for how long. The final determination of the withdrawal will be published in the Federal Register. The existing withdrawal will continue until such final determination is made.

Dated: November 3, 1989.

William E. Ireland,

Chief, Realty Operations Section.

[FR Doc. 89–26789 Filed 11–14–89; 8:45 am]

BILLING CODE 4310-GG-M

National Park Service

National Capital Region; Public Workshop

Notice is here by given in accordance with the Federal Advisory Committee Act that a public workshop will be hosted by the National Park Service, Saturday, November 18, from 8:30 a.m. to 12 noon, at the Jefferson High School in Shennandoah Junction, West Virginia, located approximately 5 miles north of Charles Town off Route 9. The purpose of the meeting is to present alternatives on the special park boundary study as authorized by Congress. This workshop is a follow-up to the March 11, 1989 workshop held to gather ideas on the special park boundary study.

This study of lands adjacent to the park is to consist of three (3) parts: the first is to focus on protection alternatives for the largely undeveloped lands comprising School House Ridge just west of the National Park; the second is to focus on protection alternatives for largely undeveloped lands in the down river view of the Potomac from Jefferson Rock located in the Harpers Ferry National Historical Park; and the third is to focus on the remaining largely undeveloped lands containing outstanding cultural or scenic lands that are integral to the telling of the park's story or maintaining its setting.

The number of acres involved are approximately 1200 acres in Jefferson County, West Virginia; 100 acres in Washington County, Maryland and; 100 acres in Loudoun County, Virginia.

The study excludes developed lands in and around the towns of Harpers Ferry and Boliver, West Virginia and Sandy Hook, Maryland.

There will be a fourteen (14) day comment period following the workshop. Comments may be sent to the following address: Superintendent Donald Campbell, Harpers Ferry National Historical Park, Harpers Ferry, West Virginia 25425.

FOR FURTHER INFORMATION CONTACT: Resource Manager Bill Hebb at (304) 535–6371 Ext. 6224.

Dated: November 6, 1989.

Robert Stanton,

Regional Director, National Capital Region.

[FR Doc. 89–26803 Filed 11–14–89; 8:45 am]

BILLING CODE 4310-70-M

Subsistence Resource Commission Meeting

AGENCY: National Park Service, Interior.

ACTION: Subsistence Resource Commission meeting.

SUMMARY: The Superintendent of Wrangell-St. Elias National Park and Preserve and the Chairperson of the Wrangell-St. Elias National Park Subsistence Resource Commission announce a forthcoming meeting of the

Notices of Scoping Sessions

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EAGLE MOUNTAIN PROJECT UPDATE

A monthly status report prepared by Mine Reclamation Corporation **Issue No. 4, Oct.1989**

EIS SCOPING SESSIONS SCHEDULED

The Bureau of Land Management has issued the "notice of intent" for the preparation of an environmental impact statement (EIS) on the project and has scheduled three scoping sessions. The sessions will be similar to those held by Riverside County for the state-required environmental impact report (EIR) but will be conducted as formal public hearings. The primary purpose of each session will be to solicit comments on what should be addressed in the EIS.

The meetings will be run by the Bureau of Land Management, with Riverside County staff also participating.

WEDNESDAY, DECEMBER 6
7 PM
LAKE TAMARISK RECREATION CENTER
26-251 Parkview Drive
Desert Center

THURSDAY, DECEMBER 7
7 PM
PALM DESERT CITY COUNCIL CHAMBERS
73-510 Fred Waring Drive
Palm Desert

MONDAY, DECEMBER 11
9 AM
SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS
818 West 7th Street, 12th Floor
Los Angeles

If any of the times or locations of the sessions should change, MRC will send notices to everyone on the newsletter mailing list. Times and locations also can be confirmed by calling Leslie Jensen of MRC at (213) 868-5005.

XU U 11/30 an
11/27

IMMEDIATELY, Nov. 29, 1989
Russ Kaldenberg, 619/323-4421
Barbara Maxfield, 714/276-6383

DRAFT

CDD-90-11

Eagle Mountain Landfill Proposal Subject of BLM Meetings

Public meetings to identify significant issues and concerns related to a proposed waste disposal facility at the Eagle Mountain Mine have been scheduled in December by the Bureau of Land Management's Palm Springs South Coast Resource Area. The information gathered at the meetings will be used in developing a joint County-Federal Environmental Impact Report/Statement for a proposed right-of-way and land exchange necessary for project implementation.

The Mine Reclamation Corporation has proposed using an inactive iron mine owned by Kaiser Steel Resources, Inc., located approximately 10 miles north of Desert Center and an associated railroad spur as a regional site for retrievable storage and disposal of nonhazardous municipal solid waste generated in Southern California.

The public scoping meetings have been scheduled as follows:

December 6 7 p.m.	**Lake Tamarisk Recreation Center** 26251 Parkview Drive in Desert Center
December 7 7 p.m.	**Palm Desert City Hall** 70510 Fred Waring Drive in Palm Desert 73510
December 11 9 a.m.	**Southern California Association of Governments** 818 West 7th Street, 12th Floor Conference Room in Los Angeles

Public comments also will be accepted until December 20, 1989, at BLM's Palm Springs-South Coast Resource Area, 400 South Farrell Drive, Suite B-205, Palm Springs, CA 92262.

Potential issues already identified include air quality, social and economic impacts, ground and surface water quality, desert tortoise, bighorn sheep, cultural or historical resources, and recreation and wilderness values. Other significant issues and concerns identified during the scoping sessions will be included in the environmental analysis.

The corporation has leased approximately 8,300 acres of the Eagle Mountain Mine and the 52-mile private railroad for a period of 100 years. If authorized, the landfill would open in 1991 and eventually process up to 20,000 tons per day. The estimated capacity of the proposed landfill is in excess of 500 million tons, with a minimum life of 100 years. The project would be developed to meet stringent state and federal regulations for municipal solid waste landfills. BLM would need to convert the existing legislatively approved railroad right-of-way for mining use to a BLM-approved right-of-way for railroad and road access to the site. The agency also would exchange approximately 2,800 acres of public land included in the site for private lands with sensitive biological, cultural, scenic, or other resource values.

-BLM-

Notes from 7 Scoping Meetings

DESERT CENTER AREA SCOPING SESSION
August 30, 1989
7:00 PM

Number of persons attending: approx. 50

- Why are the scoping sessions being held now, when mobile home residents are not in town?
- What will divert water from the pit, from the farms and other property east of the mine?
- Who decides who will do the EIR? Will it be a full EIR?
- Air pollution from diesel trucks and the dispersion of that pollution should be addressed.
- Will the public get to see the permit applications before they are approved?
- Is this the only chance the public will have to comment?
- There is an active seismic fault running through the east pit.
- Groundwater is the single most important concern.
- The biggest problem will be hazardous waste in the loads arriving at Eagle Mountain.
- What will be done to prevent pollution and health hazards at the landfill and at the transfer stations?
- Will leachate be formed, and, if so, what will be done with it once it is collected?
- Letters from MWD indicate that the east pit is over a massive water resource; a letter from Environmental Affairs Secretary Sharpless says all waste management projects must be included in the County Solid Waste Management Plan.
- There is a large amount of water in the east pit, and trees.
- How will the dump affect the desirability of living in Desert Center/Lake Tamarisk?
- A detailed assessment of the transfer stations should be included in the EIR for the landfill, especially since hazardous waste are a major concern.

- Water in the east pit was a major issue in the late 1970s, and there was a problem trying to pump it out then.

- What categories of waste can go into a Class III landfill?

- Where and how does County control come in?

- Approval of the project is a political issue, already decided.

- What impacts will the project have on the big horn sheep and other species?

- The EIR should address alternatives to landfills; the volume of waste going to landfills should be reduced at the transfer stations.

- What happens to the waste after it is landfilled? What compounds does it form, and which of those compounds are toxic?

- Will tires be accepted at the landfill?

- Safety issues need to be addressed at truck and rail crossings near the school.

- Will the rail/truck crossing be at grade or an overpass?

- What is the relationship between Kaiser and MRC? Will Kaiser be involved in the landfill operations? Which firm has ultimate responsibility for how the land is used?

- The EIR should address the larger context of the waste management crisis.

- The EIR should address alternatives to landfills.

- Recycling should be done at home.

- Will the project deter recycling efforts? Will it deter the development of other waste management options and technologies?

- Has MRC already selected transfer station sites?

- The use of trucks onsite and to haul containers of waste to Eagle Mountain should be addressed.

- The landfill and equipment should have use the best available technology.

- What will be the economic impacts of the project on the community? How much money will be coming into the community?

- What will be the air quality impacts of all equipment used at the site?

- Which agencies were notified about the preparation of the EIR?
- What will be the effects of the project on the aqueduct?
- Is MRC's President a former Kaiser employee?
- How much money will Kaiser get out the deal?
- What are the specific terms of the lease that MRC has with Kaiser?

INDIO SCOPING SESSION
August 31, 1989
7:00 PM

Number of persons attending: approx. 10

- Will there be a contingency plan for disasters at the site and on the rail line, such as fires, derailments, floods, etc.?
- What will be done with the waste if there is a temporary shut down of the rail line or access to the landfill?
- What will be the effect of the trucks and trains on air quality? What will be the impact of the trucks on roads?
- The EIR should address the local traffic impacts of each train to and from the landfill and the impacts on the rail system.
- How much existing train traffic is there on the SP mainline?
- What will be the economic impacts on the cost of disposal for households and businesses?
- What will be the traffic impacts of the truck traffic, who will pay for road improvements, and who will pay for road maintenance? What will be the impact of the trucks on Interstate 10?
- Could all the waste be transferred by rail (no trucks)?
- Where will the trucks come from and what limitation will be put on when the truck option can be used?
- Will the containers be cleaned/washed after they are emptied, and, if so, what will be done with the water used?
- The quality and capacity of the existing sewage treatment needs to be examined.
- The site should be required to treat and recycle water rather than discharge effluents to the sewer.
- The effects of flash floods on the landfill and train tracks should be examined.
- Are there endangered species on the site or along the rail line?
- What will MRC do about future liabilities?

- Does Kaiser actually own the land at the mine site? What about the rail access?

- Herzog was involved in waste-to-energy in San Diego, will the same be proposed for Eagle Mountain?

- Will mineral resources at the site be protected? Will mining occur in the future? What does the State have to say about this?

- Transfer stations should be covered in detail in the EIR, especially since they are where the controls on hazardous wastes must be exercised.

- The transfer stations should be required to meet the most stringent standards applicable in the region.

- What is being or should be done in the metropolitan areas to reduce the volume of waste produced?

- Quality control and inspections are essential at the landfill and transfer stations.

- The trains should be tagged so that they can be tracked.

- MRC should be required to pay for all site monitoring as a condition of any permit it receives.

- How can the permits be used to ensure the site is monitored?

- Waste management/landfills should be controlled as a public utility.

- Limits should be put on the fees charged at the landfill and the profit that MRC can make.

- Controls should be put on the total number of transfer stations that MRC can operate and the volume of waste they can contract for; MRC should not be allowed to contract for more waste than Eagle Mountain can handle daily.

- The EIR should give a detailed breakdown of the tipping fee, including MRC's profit margin.

RIVERSIDE CITY SCOPING SESSION
September 1, 1989
9:00 am

Number of persons attending: approx. 15

- Does MRC have transfer station sites?
- Trucks owned by Waste Management were out in the Desert Center area. Is MRC involved with Waste Management?
- What regulations apply to landfill liners? Will the Eagle Mountain site be lined? If so, with what?
- How far away is the school from the landfill site?
- Does Kaiser or MRC have plans to sell the aggregate on site?
- Does Kaiser or MRC have plans for the Black Eagle pit?
- If mining is resumed, will blasting be used and, if so, what effect will it have on the landfill?
- Does the rail line have access road south of Interstate 10?
- What will be done to protect groundwater in the event of spills (derailments or crashes that would cause the containers to spill their contents)?
- How will the waste stream be controlled?
- What kind of emergency equipment and contingency plan will be used in case of derailments or other disasters?
- What assurances will be given that no hazardous waste will come to Eagle Mountain?
- What permits will be required?
- What plans does MRC have to clean up the water after it is contaminated?
- Is it possible to make permit conditions permanent?
- Who is going regulate the volume of waste going to the transfer stations and then to Eagle Mountain? How will we know that the site isn't taking in more than it's permitted to?

- What health hazards to workers will the transfer stations pose? What kind of training will the sorters have?
- How sturdy are the containers for the waste loads and for the recyclables?
- Will the loads of recyclables have any hazardous components? When the loads are stored at Eagle Mountain, will they produce contaminants or safety problems?
- What other landfill sites have been studied?
- Is the project economically feasible?
- What about local agricultural concerns?
- The EIR should take into account water supply and quality reports prepared back in 1960.
- The project should be reviewed in the context of MWD's long-range plans.
- What will be done with the methane produced at the site? Will the trash be sprayed with water to generate methane? If so, will that water seep through the landfill eventually?
- What is the site leaks in the future? Will Kaiser and MRC be held liable?
- What will be the environmental impacts of excavating the ponds for liner materials? Will there be open pits when the material is removed?
- The moisture content of the waste should be checked.
- Will the EIR look at plastic liners as well as the proposed clay liner?
- How much methane will leave the site?
- What is the quality of access roads to the site and along the rail line?
- Who will pay for the improvement and maintenance of the roads?
- This type of project would make more sense if there were a regional waste management plan and a regional Joint Powers Agency for waste management. A model solid waste plan should be developed for the SCAG region.
- What heath and safety threats will the storage of recyclables pose? What about the landfill?
- Will the recyclables be cleaned before they are moved out of the transfer stations?

- How does MRC propose to do litter control in protected park areas? What can be done to prevent winds from spreading litter?
- Is the site affected by the proposed desert wilderness act?

BLYTHE SCOPING SESSION
September 14, 1989
7:00 PM

Number of persons attending: approx. 15

- Are there other sites of this scale?
- How many trucks per day and how much waste would be carried by each one?
- How far west will the landfill go?
- What kind of drainage and flood control systems will go in?
- What effect will rain have on rail and landfill operations?
- What kind of liner will be used? What's in the material proposed as a liner? What will be the effect of pressure from waste in the landfill on the liner? Is the liner impermeable?
- Photos of rain damage in the area from a recent storm are available.
- The material proposed for liner are already contaminated, and the ponds that hold it leaked.
- Are there fissures under the pit from all the blasting during mining operations?
- What else could be done with the site?
- What effect will the project, including its truck road, have on local businesses?
- What type of trucks and other equipment will be used?
- What is the estimated lifespan of the landfill? What provisions will be made to handle the site after it's closed?
- Are there plans for aluminum refabrication at the site?
- Will tailings be used for cover at the landfill?
- Does Kaiser or the County own the site?
- How much land is MRC leasing and how much is being used for the landfill?

- If there are not plans for landfills in the other two pits, why is MRC leasing so much land?
- What will be done on the rest of the property?
- MRC should adopt the guidelines/policies proposed by the Coalition for an Environmentally Responsible Economy, which call for risk assessments, damage control, full disclosure, and environmental audits.
- Who decides if another EIR is needed if other activities are proposed at the site in the future?
- What does Kaiser stand to gain from the project?
- How will the Cranston bill affect the project?
- What will be the impacts on the eastern portion of the County?
- Will the desert tortoise be affected?
- Herzog Contracting was involved in waste-to-energy in San Diego, will the same be proposed for Eagle Mountain?
- What will be done to stop illegal dumping of hazardous waste at the transfer stations and the landfill?
- Where will fuel be stored at the site and how much?
- Will tires be accepted at the landfill?
- What materials can be accepted at a Class III site?
- Who will be doing the screening at the transfer stations? Will they know what to look for?
- How many jobs will the project provide? What will be its economic impacts?
- Will the jobs at the site be union or non-union?
- What wastes will be prohibited from the site?
- What does the County mean when it says that 50% of the revenue will go to desert communities?
- Who will pay for the improvement of maintenance of the roads and rail line?
- What is LA doing to recycle more waste?

- Is there work already going on at the site (preparation for landfill operations)?
- Will BLM get any royalties from the landfill?

Memo to: Jean Carr
From: Bob Coale
Subject: Scoping Meeting Comments
Date: December 11, 1989

Below are listed the comments received during the final EIS scoping meeting held on December 11, 1989.

1. How will greenwaste be handled? Is composting to be employed? PD, A

2. Will the EIS propose or establish criteria regarding the degree of separation of recyclables that will be required before trash can be landfilled at Eagle Mountain? PD. A

3. What is the worst case scenario regarding the storage of recyclables in containers at Eagle Mountain? Is there to be a limit on the number of containers, the space to be occupied by containers or other criteria used to limit the storage of recyclables at EM? PD. A

4. In the event of an earthquake or other disaster that would disable the rail delivery of refuse to EM, what will be done to ensure the continuation of refuse delivery to EM. What internal flexibility/storage exists within the system to prevent bottlenecks from causing difficulties? PD, A S

5. It is desired that monitoring wells be sampled from several horizons to ensure that various water strata are adequately represented. Specifically, it was suggested that monitoring be performed from a depth of at least 350' in Jim Capp's well. WQ

6. Allen Reames desires a copy of AB2448. PD. A

Memo to: Jean Carr
From: Bob Coale
Subject: EIS Public Scoping Meeting Comments
December 8,1989

I have listed the comments/questions that were made during the two EIS Scoping meetings held in Desert Center and Palm Desert on December 6 and 7, 1989.

DESERT CENTER COMMENTS

1. Will the red clay proposed to be used as a liner be analyzed to see if the clay itself may contain undesirable chemical or physical characteristics? WQ

2. How will the realigned rail line (and container truck road) cross Kaiser Road? T

3. Will an additional water treatment plant be built to handle leachate or other water.? WQ

4. What personnel training will be provided to new workers at the Project? S

5. What will be done to control residual liquids and hazardous wastes being placed in the landfill? S

6. What is the relationship between SCS/BLM/MRC/RECON? PD, A

7. What additional studies are being conducted on the desert tortoise and bighorn sheep? B

8.. What caused [County Supervisor] Corky Larson to change her mind about the Project? PD, A

9. What will be done to protect ground water quality? WQ

10. What are the economics of the project? How much income to County, MRC, desert communities, etc.? EC

11. How can MRC be 100% sure that the "contaminated clay liner" will not leak? What will MRC do when the liner does leak? WQ

12. How will the liner be placed on the pit sidewalls to ensure a water-tight seal? WQ

13. What can MRC do to eliminate the air pollution that is sure to result from the operation of 200 trucks per day to the site? AQ

14. Will the [waste hauling] trucks use the existing Kaiser Road? T

15. Are formaldehyde emissions from diesel truck exhaust more dangerous than other emissions from gasoline fueled vehicles? AQ

16. Richard Atwater [RWQCB director for the Lower Colorado Basin] has stated that the East Pit is full of cracks and cannot contain water. How will MRC contain wastes in the pit if this is true? WQ

17. Hydrogeologists have stated that water pollution as a result of the the landfill cannot be prevented. It is a matter of when, not if. How will MRC compensate the public for contaminated groundwater? WQ

18. What will be done to control sea gulls, rats, and other vermin? S

19. How was RECON selected? Is there any connection between Jean Carr [MRC] and John Larson [RECON] because of their past association on projects involving the K-rat? PD, A

20. What is the federal law for the selection of consultants by BLM? PD, A

21. Who [what agency] is responsible for inspecting MRC during the operation? PD, A

22. Who [what agency] will ensure that MRC has stopped pollution that it has caused? PD, A

[illegible]

23. How much time will be allowed for MRC to clean up pollution it has caused? PD, A

24. How will MRC reverse the damage that it has caused to the environment? PD, A

25. Who will pay for and execute cleanup of pollution? PD, A

26. How will MRC compensate local citizens for pollution caused by the Project? PD, A

27. How will intense local rainfall issues be handled? DR

28. How will water that falls into the pit be handled? DR

29. Will there be a ditch on the north and south walls to interrupt monsoon floods? DR

30. How will 200 trucks per day be handled on the steep grade to the [Chiriaco] summit? These will slow down traffic, damage the road, and annoy other Interstate users. T

31. Will MRC repair the existing Eagle Mountain rail line? PD, A

32. What will be done if the tracks wash out? What will happen to the trash? Will it be placed on a siding to rot? PD, A

33. Will the Eagle Mountain road be upgraded? T

34. How will the fumes from 200 trucks on the Eagle Mountain Road affect the residents of Lake Tamarisk which is directly downwind? Residents of LT have sinus and asthma problems. AQ

35. Will Southern Pacific deal with the added pollution that their engines will produce merely by paying fines, or will they take steps to reduce pollution? AQ

36. The project will be performed in a fragile desert environment. How can MRC justify this when they will degrade the area through noise, rodents, fumes, bugs, and traffic? N S AQ T

37. How does the proposed project relate to Stringfellow? If Stringfellow had leaks through a 5' liner, how is it possible that MRC won't have through only a 2' liner? PD, A

38. Will MRC line the pit with plastic? WQ

39. Why did the county do away with hazardous waste regulations that specify that these cannot be discarded within 30' of the water table, within 2000' of an agricultural well, and near schools and prisons? Eagle Mountain is the only place in the county where these conditions co-exist. Does this mean that there will be hazardous wastes placed in the pits? PD, A

40. Why use plastic liners? Even these will leak over 100 years. WQ

41. Will wells be sampled vertically? WQ

42. A CNN report indicated that this landfill is a "done deal". Is this true? PD, A

43. Is it possible for various involved agencies (BLM, Riverside County, RWQCB, etc.) to contact concerned citizens and ensure them that their (citizens) input is still useful? PD, A

44. Have other ways been considered to handle the trash beside Eagle Mountain? PD, A

45. Will the take into account the travel through and rail transfer in other communities? T

46. What is MRC's background? Who are its principals? Is MRC honest? How can we learn of MRC's credibility? PD, A

47. What laws exist to ensure that the agencies are not pulling a "quickie" on the public and that they will really react to cleanup requirements? PD, A

48. Is MRC totally responsible for the financial costs of cleanup [of environmental contamination]? PD, A

49. Is there anything that limits the amount of rubbish that can be placed in the pit on a daily as well as project lifetime basis? PD, A

50. How much will the tipping fees for the project be? What will happen to these fees? Will local trash collection costs increase? EC

51. Riverside County is already strapped with the problems of Stringfellow. Why not let another county take the problems associated with municipal solid waste? PD, A

52. If the "footprint" of the landfill is only about 1700 acres, what will happen with the remainder of the 5200 acres in the project? The remainder of the 8300 acres of the lease? PD, A

53. Is the only for the East Pit area? PD, A

54. Kaiser Road has not been upgraded or adequately maintained since Kaiser ceased operations. Will this road be upgraded? Who will pay for it? T

55. If the landfill is full and then contaminates the ground water, will all of the garbage be taken out of the pit? Where will it be put? WQ

56. What is the connection between the contamination resulting from an Otai dump [in San Diego] and Bill Herzog? WQ

56. How will vertical water wells [monitoring, extraction] be lined? WQ

PALM DESERT COMMENTS

1. Please define [in the documents] what portion of the 5200 acres will actually be used for the 1700 acre landfill. PD, A

2. Please include in the documents some conversions between acre-feet of trash, cubic yards of trash, tons of trash. PD. A

3. How will MRC respond to the effects of heavy rains that cause washouts of the rail line? D

4. If a disaster occurs [earthquake] that substantially increases the amount of trash generated, how will MRC respond? What is the elasticity of the system to accommodate short-term "overload"? PD. A S

5. Will the trestle bridge on th EM rail line withstand earthquakes? G ?

6. Is RECON a truly independent entity in the EIR/S process? PD, A

7. What effects will the exhaust fumes from diesel engines and trucks have on the air quality in Joshua Tree National Monument? AQ

8. Why are trucks being allowed into the project at all? Why not use just trains? PD, A

9. Will alternate fuels for trains and trucks be considered? Will the rail lines be electrified?

~~PD, T~~
AQ

10. Will the EIR/S address whether the tailing contain hazardous components? (WQ

11. If the tailing [for what ever reason] are not suitable for use in the land fill, will local soils be used? Where will these come from? Will cover have to be hauled in on the rail line? WQ

12. Will any refuse from Mexico be hauled to Eagle Mountain? PD, A

13. Will any recycling or other trash handling be performed in Mexico? PD, A

14. Will any trash be imported from Arizona? PD, A

15 Will the ground water quality of the Chuckwalla Basin be addressed in the EIR/S? WQ

16. Does the design of the EM rail line accommodate loaded uphill travel? The line was designed to handle downhill loads of iron ore. Is the structural integrity of the line such that it can handle this reverse traffic? PD, A

17. Will county residents have to pay for maintenance to the EM rail line? To I-10? To the Eagle Mountain Road? To Kaiser Road? T

18 What is the impact of 200 trucks per day on I-10? T

Written Responses to NOP and NOI

Couldnt attend Plm Desert scoping meeting hand delivered by C. Toenjes 12/7/89

Bureau of Land Management
400 South Farrell Drive
Palm Springs, CA 92262

Re: TRASH BY RAIL
December 7, 1989

Sirs: Russell Kaltenberg

Enclosed is a copy of our letter to the Riverside County Planning Department in which we voiced our concerns over the proposed plan for "Trash by Train".

Added to these concerns would be the possibility that so called "low level" radioactive materials may be included in the Eagle Mountain site if the NRC decides to go ahead with its proposal to deregulate radioactive materials.

We support recycling, ban on disposable diapers, plastic foam utensils and other non-biodegradable materials, storage on site above ground for easier monitoring, etc.

We feel that the Desert is under attack from every direction. This Trash by Train proposal is of such grave concern that it should possibly be put to a vote of the people rather than having the responsibility rest in the hands of a few.

Cut back on the garbage - recycle - ban materials not biodegradable. Prohibit dumping on the Desert.

Thank you.

Carolyn Toenjes

Carolyn Toenjes
1863 Park Drive
Palm Springs, CA 92262

Dollie Irwin
420 N. Morongo
Banning, CA 92220

Pat Mahoney
4441 Mockingbird Lane
Banning, CA 92220

[illegible] DEC -7 [illegible] 9:28

September 25, 1989

MRC/EAGLE MOUNTAIN
TRASH-BY-RAIL
DRAFT/FINAL EIR
PUBLIC COMMENT

Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501
Roger Streeter, Planning Director
Ron Goldman, Chief Planner
David Mares, Planner

Dear Gentlemen:

In a recent conversation, by telephone, with Dave Mares, we were told to submit comments to your office regarding the proposed "Trash-By-Rail/Eagle Mountain project. We are sending you concerns and comments which we, as residents of the San Gorgonio Pass and Coachella Valley, would like addressed in the draft and final versions of the Environmental Impact Report, as mandated by the California Environmental Quality Act. We find it incredible that the County of Riverside is even considering such an idea (for this type of project) for 100 years. Shipping Los Angeles Orange, San Diego, other? county trash through and to Riverside County for $10 to $30 million dollars a year is not a reason to put Riverside County "up for sale". $440,000 to the Desert Center area does not mean that we are all for sale. That trash will go through our communities daily! We reject the approval of the memorandum of understanding with Mine Reclamation Corp. by the Riverside County Board of Supervisors that declares the County's intention to permit the disposal of L.A. County waste at Eagle Mountain. We question their right to enter into such an agreement.

We are fully aware that serious public controversy, under CEQA, could and should reject this project. We would like to now state, for the record, that we oppose any type of refuse, waste, trash or rubbish, both so-called household or toxic/hazardous and radioactive from anywhere outside of Riverside County, by any means of transportation, through and to Riverside County, for any means of disposal, burial or incineration anywhere in Riverside County.

As of September 1, 1989, the Bureau of Land Management had not accepted the role as co-lead agency in the project, Mr. Mares said. Has that agency (BLM) now accepted? What is the name of the person in charge at the BLM? If the BLM is not yet on board or chooses not to become involved in the project, could you please send us that information? Who, from the County is in charge as lead and/or co-lead? What company will do the EIR? Who is in charge? Who hired the company for the EIR and who will pay the bill? Also, what initiated this project? Was it a study by someone or some agency? Was it Kaiser Steel Resources, Southern California Association of Governments, The Santa Fe Railway Company, the Mine Reclamation Corporation? Others? We would like the names of the persons and companies, dates of proposals and the proposals showing Riverside County sites and routes, as well as any other information explaining how this proposed project originated.

How does it happen that the San Gabriel Valley cities feel so positive about this "Trash-by-Train"proposition that they are already organizing cities along the way to sign up for the long haul?

This portion of our comments, questions and concerns should be included with the following numbered items in the draft and final EIR as Resident/Citizen public comment on the proposed project.

COMMENTS, QUESTIONS AND CONCERNS RE: TRASH BY TRAIN

1. State Department of Health Services officials recently reversed a decision requiring an EIR and approved plans to build a controversial toxic waste incinerator in Vernon, CA without an Environmental Impact Report. Who has final jurisdiction for the Mine Reclamation/Eagle Mountain trash by train proposal and could anyone for any reason dispense with the EIR?
2. Governor George Deukmejian and legislative leaders tentatively agreed on Sept. 5, 1989 to include incineration as part of a long term strategy to reduce solid waste in California by 50% before the year 2000. What guarantee will be provided that incineration will not become a part of "Trash by Train project now or in the future with Riverside County as the major holder of So. California trash if this project is approved?
3. Is there a plan for Los Angeles, Orange, SanDiego and other county trash, refuse etc. to be collected and separated at sites in Riverside County? or will trains be fully loaded upon entering Riverside Co.? We oppose Riv. Co. separation/loading sites.
4. Municipal refuse is known to contain toxic and hazardous materials, industrial, hospital and medical waste (some radioactive). By what method will this refuse be separated, identified and processed into non-toxic trash for transport to the Eagle Mountain site? Describe in detail, please.
5. Where will collection and separation sites be located?
6. What local, county, state, federal regulations will be used to insure (guarantee) that refuse is solid and non-toxic? Name the agencies that will monitor, inspect and have jurisdiction. How often will monitoring take place? What would the penalties be for violations? Please show plans for test wells and other monitoring devices at dump-site. We feel that once toxity shows up in test wells it is too late to stop further contamination.
7. Would Mine Reclamation use sub-contractors, under which jurisdiction, to collect, separate, monitor, load and transport refuse to Eagle Mt.?
8. To assure that this quick-fix, trash-by-rail scheme will not promote future trash accumulation (instead of curbing it) each city and county area producing refuse proposed for inclusion in this plan must submit recycling plans and ordinances based on current and projected population. Plans should reflect the entire time of contract for each city or county area. Projections should include breakdown in total tonnage of paper, plastic, glass, etc. Cities and counties not submitting recycling plans and trash projections should be refused access to the project.
9. All land-fills and dumps sooner or later produce toxic gases from decaying trash. How will toxic gas be eliminated from the Eagle Mt. site? How will flora and fauna and surrounding environment be affected? Describe in detail how gas will be eliminated from this site.
10. How would refuse be contained for shipment? Would containers be used only for trash transport or will other used be permitted on return trip?
11. Will chemical or other repellents be used? Will pesticides be required for insect and rodent control? for flies? Will pesticides be used on containers, rail cars, at collection, separation and loading sites and at dump-site at Eagle Mt. Please describe in detail.
12. Estimate in time loaded trains could be delayed on sidings or tracks in the San Gorgonio Pass and Coachella Valley areas. Explain and

describe occurances and describe in detail all impacts to immediate and surrounding areas.

13. Describe in detail the terms waste, trash, refuse, rubbish and list all ingredients per term.
14. In case of earthquake, train wreck/accident, fire, flood or other event causing rail transport stoppage enroute to dump, how will refuse be transported to Eagle Mountain site? Describe emergency plans for each event.
15. Cite least and worst case scenario for accident enroute to Eagle Mt. site. Give mitigation measures. Show response plan for all points enroute.
16. Cite least and worst case scenario for accident, ground water contamination, other air, land, water pollution and contamination to Eagle Mountain site and surrounding area. Give mitigation measures. Show response time.
17. Describe in detail responsibility and liability of Mine Reclamation Corp., BLM, Riverside County, Kaiser Steel Resourses, Southern California Association of Governments, Santa Fe Railway, San Gabriel Association of Cities, County, State, Federal Government agencies should the Public and/or the environment be damaged by any or all phases of this project. Show liability and responsibility for each year of total contract including dollar figures for each entity for each year.
18. In case of damage to public or environment, now or in the future, a pool of money must be on hand so that work for clean-up is not delayed while various parties and agencies quibble about who is going to pay. The tax-paying public should not be responsible for clean-up of the environment or damage to the public resulting from any phase of the trash-by-train project including contamination on or off site at Eagle Mountain and its impact on surrounding communities and desert environs. Show individual assets of all companies involved and how much will beset aside for this fund by each one.
19. Is a similar proposal for trash-by-train at the Morongo Indian Reservation at the eastern limit of the city of Banning a part of this project? If so, please describe and explain.
20. What tonnage per day will be transported and deposited at the beginning of project? What estimate of tonnage per day in 100 years at end of project?
21. The Riverside County backed Pass Area Community Plan, now in development, should be included in all trash-by-train studies and decisions.
22. Bullet train and Commuter service on existing rail lines is now being studied and proposed for So. California. Railroad rights of way are being considered for purchase for this purpose. Residents of the San Gorgonio Pass and the Coachella Valley strongly support commuter rail service linking the desert to communities on the coast and to the north and south. They much prefer riding those rails themselves rather than watching L.A. trash take the ride near their homes. Describe in detail how the Mine Reclamation/Eagle Mountain trash-by-train will impact future commuter-rail routes and services.
23. Will trash cars be added to trains already travelling or will they be on trains for the specific purpose of hauling trash?
24. Describe how this will impact future oommuter service and proposed bullet train service if trash"trains do their hauling at night, empty their loads, then return for more trash in an endless chain" as stated in a recent Los Angeles Times front page story. Show impact of constant shaking and effect on foundations of homes and commercial buildings and the Westinghouse nuclear facility. Describe impact to cities with housing in close

TRAIN-BY-RAIL con't.

proximity to those tracks. What effect will this have on property values? What will be done to lesson noise pollution?

25. This Draft and Final EIR should require input from all cities on route. All comments should be carefully considered before making a decision on this project.
26. Describe in detail how trash-by-train will impact missles-by-rail now being developed by the Department of Defense. Give estimates for impact and mitigation for 100 year period.
27. Describe in detail impacts to the California Desert Protection Act (as proposed) and other desert conservation and wilderness projects now in place or proposed for the future. We request that Jim Dobson, Director, California Desert Protection League, Los Angeles; Alan Cranston, U.S. Senator, CA.; The National Park Service; and Jeff Widen, California Desert Coordinator of the Sierra Club be contacted for input into the EIR.
28. Are existing rights of way to be used for trash-by-train, or will new routes and tracks be needed?

Thank you!

Sincerely,

Dollie M. Irwin
Dollie Irwin
420 N. Morongo
Banning, CA 92220

Carolyn Toenjes
Carolyn Toenjes
1863 Park Drive
Palm Springs, CA 92262

STATE OF CALIFORNIA GEORGE DEUKMEJIAN, *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

RECEIVED
NOV 13 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

November 8, 1988

Mr. David Mares
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Subject: California Public Utilities Commission's Review of the Eagle Mountain Project Notice of Preparation (NOP)

Dear Mr. Mares,

The California Public Utilities Commission's (CPUC) staff has reviewed the above-mentioned Notice of Preparation (NOP). The CPUC has jurisdiction over certain components of the proposed operation. These areas include: clearance above the centerline of the track (General Order 26-D) and construction and maintenance adjacent to trackage (General Order 118).

To ensure compliance with these and other Public Utilities regulations, the Commission's Railroad Operations & Safety Section will review all safety and operational components of the proposed operation. The Commission's review will include the examination of operating practices, track, rolling stock, and emergency plans that are prepared in compliance with both state and federal regulations. The contact person for this project is Mr. Jack S. Rich, Supervisor of the CPUC's Railroad Operations and Safety Section. Mr. Rich may be reached at (415) 557-1934.

We appreciate the opportunity to comment on the proposed project and look forward to receiving your subsequent publications.

Sincerely,

Elaine Russell, Supervisor
Environmental and Special Projects
Section

cc: Jack Rich, Railroad Operations and Safety

City of La Quinta

78-105 CALLE ESTADO — LA QUINTA, CALIFORNIA 92253 - (619) 564-2246
FAX (619) 564-5617

December 5, 1989

Ms. Marianne Wetzel
Bureau of Land Management
Palm Springs - South Coast Resource Area
400 South Farrell Drive, Suite B-205
Palm Springs, California 92262

SUBJECT: BLM CA-25594

Dear Ms. Wetzel:

With regard to the above-noted project, the City of La Quinta requests that consideration be given to providing access to the Eagle Mountain waste disposal facility for the communities located in the Coachella Valley, and in particular, the City of La Quinta. This can be accomplished by guaranteed allocation rights to the City for future use.

Please provide future correspondence regarding this facility to me.

Very truly yours,

Ron Kiedrowski
City Manager

RK:JH/mr
cc: Planning & Development Department

MR/LTRJH.116

Citizens Committee to Elect Patricia "Corky" Larson/Supervisor

October 12, 1982

Dear Agnes and Carter,

I hope the two of you are feeling fit as a fiddle now. Gosh, Carter, I knew Marines were tough but you sure bluffed out not feeling well when we saw you! Agnes, I hope you are over your fight with the bath tub! I was so sorry to hear of your fall.

I just can't thank you enough for all you have done for me. I like to think it is an investment in good government and I do pledge to work hard to represent Desert Center in a manner which will make you proud of your choice.

I was interested in Mr. Suitt's response to a question put to us in a radio forum the other day. The moderator said that dumps were becoming full and it was estimated that by the year 2025 (or some such date) they would be all full and we would have no place to dump. His question was, what would we as county Supervisor do about it. I about fell off my chair when Tom said to the effect, that one possibility would be to put our trash on the railroad cars since Southern Pacific Railway runs thru our valley and ship it to the Eagle Mountain mine to dump! I couldn't believe that. If I lived in Desert Center I would be furious at that, but the cost of that kind of proposal is ridiculous to even suggest as a solution.

What has changed Corky's opinion?

I don't know where Eagle Mountain people would be if they knew of his "solution" but if you are interested in the tape I'm sure that you could get a copy from Ed Kibbey, KPSI, 174 N. Palm Canyon, P.S. 92262.

I am convinced, Carter and Agnes, that the election will be won by a very small margin. He has already outspent me by over two to on and he is spending almost $12,000 on one local TV station while I am only spending $1,900. It will be the vote of the hinterland that will make the difference soanything that you can do will make an impact. Again, my thanks for all that you have done so far. God bless you both.

Fondly,

Corky

1520 Driftwood Drive • Palm Springs, CA 92262 • (714) 327-9689

EAGLE MOUNTAIN LANDFILL EIR/EIS

BUREAU OF LAND MANAGEMENT/COUNTY OF RIVERSIDE SCOPING MEETINGS

RECEIVED
BUREAU OF LAND MANAGEMENT
1989 DEC 18 PM 1:32
[illegible] AREA
PAL[illegible]GS, CA.

WRITTEN COMMENT FORM

December 6, 1989
7:00 p.m.
Lake Tamarisk Recreation Center
26251 Parkview Drive
Desert Center, CA 92239
(619) 227-3203

If anyone wishes to respond in writing relative to determining the scope of the environmental document for the Eagle Mountain Landfill project, they are encouraged to do so.

Name: Marian Roberta Livengood

Address: P. O. Box 322
Desert Center, CA 92239

Phone Number: (619) 227-3182

Please note that all scoping comments must be received by the Bureau of Land Management by December 20, 1989. Address comments to:

Marianne Wetzel
Bureau of Land Management
Palm Springs-South Coast Resource Area
400 South Farrell Drive, Suite B-205
Palm Springs, CA 92262

Comments:

I was unable to attend the meeting, but I heartily agree with the statements made by residents of this community in opposition to the project.

There is no way you can assure the populace that no contaminants will seep into our drinking water. You assume that people will do their job and remove those items which are toxic; however, we all know that 'slip-ups' are made in any organization. Then, too late, it would be discovered, but we would have already been harmed. You cannot REMOVE toxins and carcinogens....

There was an excellent question stated in the Press-Enterprise article of December 7th. "...how are you going to compensate these people..." referring to loss of our water and therefore our homes. Is MRC providing a fund with which to buy our homes and farms when the water is ruined?

(Continued on next page)

Continuation of Written Comments...

The odors will probably be more than some of us can stand. We, who do not smoke, have very sensitive nostrils and the offensive odor may prove to be intolerable.

How do you propose to regulate or dispose of the methane gas that is a side effect of landfill operations?

What is your answer to the problem of ravens which will be attracted to the area by the garbage? They will feed on the young desert tortoise and other small animals. I share the concerns of the Park Rangers about the coyotes bringing diseases into our community after feeding on the refuse.

Is the Los Angeles community ready to sacrifice their own drinking water in order to dispose of their wastes in our mine pit? Let some of the garbage blow into the canal used by the Metropolitan Water District to transport their water and see if they enjoy drinking contaminated water. Do you think that the shortage of water in Southern California which is foreseen would ever place a need for our water which is contained in the large aquifer under this community? If it is contaminated, what good would it be?

Many of us in the community feel that Supervisor Patricia "Corky" Larson has "sold us out" quite sometime ago. Her actions toward this community have indicated that she wants us to fail. Although Riverside County as a whole will derive some monetary benefits from the landfill, is it worth sacrificing an entire community and Joshua Tree National Monument. What about the new "confinement facility" which is scheduled to house 400 prisoners in the very near future? If we 'normal' citizens have no rights to stop this landfill, perhaps the prisoners should speak up. Perhaps they would have much more success in preventing it.

I am sure there is another area within this vast desert which might be used for the landfill. A pit could be dug a~~nd~~s it was needed, and there are trains which run through other areas, as do roads, most of which are better than our little two-land road to Eagle Mountain.

I hope our concerns will be taken into consideration before any final commitment is made.

Sincerely,

Marian R. Livengood

Marian R. Livengood
P. O. Box 322
Desert Center, CA 92239

14 December 89

Dear Ms. Wetzel:

Please find enclosed my preliminary comments regarding the Eagle Mountain Mine Landfill proposed project.

I was unable to attend any of the three scoping meetings as a result of lack of timely notice. Somehow, my letter of 20 October wasn't answered until 04 December; with my receipt of it not until 11 December.

Please enter my name on the mailing list for this proposed project in order that I may receive and review EA's (draft and final) and the EIS (draft and final).

Thank you very much.

Sincerely,

Ron Ackert
P.O. Box 3251
North Shore, CA 92254-0986

P.S. Will you please send to me a copy of the Desert Plan and accompanying amendments. Mine was destroyed when my house burned to the ground this past September.

Thanks!

RECEIVED
[illegible]
1989 DEC 18 PM 1:56
[illegible] CA.

December 14, 1989

Ms. Marianne Wetzel
USDI-Bureau of Land Management
Palm Springs-South Coast Resource Area
400 S. Farrell Drive, Suite B-205
Palm Springs, California 92262

RE: 5440
CA-25594
(CA-066.32)

Dear Ms. Wetzel:

The proposed Eagle Mountain Mine landfill project is environmentally unsound and inconsistent with the Bureau's administration of Public Lands within the California Desert Conservation Area.

Issues of concern are as follows:

1. Contamination of the network of aquifers underlying the proposed project site resulting from the accumulation of toxic chemicals that will be transported to the site with "innocent" trash.

2. Decrease in the air quality throughout the regions the transportation corridors will pass through. This impact will result from increased rail traffic as well as the gaggle of heavy truck traffic generated by the proposed project. This impact will be felt from the points of origin as well as through and to the project site, thus negating or sharply reducing the ability to attain the pollutant standards recently proposed by the South Coast Air Quality Management District, as well as those standards set forth by and within the Federal Clean Air Act.

3. Negative impacts on the air quality of the Coachella Valley generally and the Salt Creek valley, Orocopia Mountain WSA's Chuckawalla Bench WSA specifically. This will result from the "trash trains" having to "pull grade" from the railroad siding (Durmid) adjacent to Salt Creek ACEC all the way to the project site.

4. Impacts upon Joshua Tree National Monument, Pinto Basin, Eagle Mountains WSA, Chuckawalla Bench and Orocopia Mountains WSA's resulting from "Trash Devil's" are estimated at being capable of scattering "innocent trash" over an area of (100) one hundred square miles in an area. Such and each subsequent event would spew trash over and into wilderness areas within Joshua Tree National Monument, Pinto Basin as well as BLM WSA's within the fall-out area.

At this point in time, the review process of this proposed project is in the very early stages, however, based upon what I have read about the proposed Eagle Mountain Landfill Project, the only conclusion I can offer at this time is as follows: Due to the unique and fragile ecosystem of the California Desert Conservation Area in general, and Joshua Tree National Monument, Pinto Basin, Chuckawalla Bench, the Bradshaw Trail (SR 301), WSA's within the Orocopia Mountains and the Salt Creek ACEC specifically, an ENVIRONMENTAL IMPACT STATEMENT on the proposed project is in order; pursuant to the provisions within the CDCA Final Plan and 40 CFR, et al.

Thank you very much for this opportunity to comment on the Eagle Mountain Mine Proposed landfill project.

Sincerely,

Ron Ackert
P. O. Box 3251
North Shore, CA 92254-0986

RECEIVED
DEC 22 1989
RECON

to B.L.M.
No to Los Angeles
Dec. 9, 1989

No to Los Angeles on bringing their trash either by trucks or trains to Eagle Mountain or any where else in Riverside County.

Teach these people to Recycle.

Look into City of Redlands & Ontario recycling programs.

American must Recycle.

Please don't let them into our County. They own most of land in Inyo County let them take it up there.

Sincerely —
Paul & Vernessa Slater
30925 Montgomery Ave.
Nuevo Calif 92367

December 13, 1989

Bureau of Land Management
400 S. Farrell Drive, Suite B-205
Palm Springs, CA 92262

Gentlemen:

NI

We have been residents of Chuckwalla Valley for thirty years, having started a farm at that time. We have now owned a home and lived in Lake Tamarisk for the past fifteen years.

We are sorry we were unable to attend your meeting last week here at Lake Tamarisk. We do want to inform you, however, that we are definitely in favor of the proposed waste disposal dump at Eagle Mountain.

We do not feel that properly handled, as planned, it will do any harm to our area, and urge that you see fit to approve the plans.

Very truly yours,

Robert E. Anderson Ruth M. Anderson

Robert E. and Ruth M. Anderson
P. O. Box 495
Desert Center, Ca. 92239

RECEIVED
BUREAU OF LAND MANAGEMENT
1989 DEC 18 PM 1:47
INDIO RESOURCE AREA
PALM SPRINGS, CA.

Sierra Club
San Gorgonio Chapter

Serving Riverside and San Bernardino Counties
Tahquitz Group • Los Serranos Group
San Bernardino Mtns. Group • Mojave Group
568 N. Mountain View Ave., Suite 130
San Bernardino, CA 92401
(714) 381-5015

RECEIVED
[illegible] 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 1, 1989

David Mares
Riverside County Planning Department
4080 Lemon Street
Riverside, CA 92501

Re: Specific Plan No. 252, CZ 5499, CGPA 209
Eagle Mountain Project

Dear Mr. Mares:

The San Gorgonio Chapter of the Sierra Club appreciates this opportunity to respond to the NOP for the above referenced project. We believe the EIR should evaluate potential impacts to the following: groundwater quality, the Eagle Mtns Wilderness Study Area, bighorn sheep, desert tortoise and other biological resources, air quality, and public health and safety issues arising from the potential for exposure to hazardous materials and increased traffic hazards.

Additionally, the EIR should carefully describe the scope of the project and the regional context in which it occurs and address the following specific questions:

(1) What conservation programs will be implemented in conjunction with this waste disposal project? Will participating cities and counties be required to have waste reduction and recycling programs in place, and if so to what extent, as a condition of disposing of their remaining waste at this site? Will there be a regional comprehensive solid waste management plan prepared setting specific waste reduction and recycling requirements for local governments as a condition of participating in this regional solid waste disposal program? Will a JPA be established to develop agreements between various cities and counties as to the conditions under which solid waste may be disposed of at this landfill?

(2) How will rail transport of the solid waste from surrounding counties affect the potential for commuter rail services on the various rail lines connecting Orange, Los Angeles, San Bernardino, and Riverside counties?

The Sierra Club believes that society and the environment will both be best served by a solid waste management hierarchy emphasizing waste reduction, recycling and materials recovery to minimize landfill needs, resource consumption and environmental degradation. We would emphasize to the County, therefore, that should the Eagle Mtn. Landfill proposal pass environmental muster, it should be regarded as an important opportunity to advance the goals of waste reduction, recycling, and materials recovery by requiring maximum efficiency in these areas from all local entities which would desire to dispose of their residual waste at the landfill. While we do not know the current status of the bill, we would point out to the County that AB 997 (Bader), or a similar bill, could play an important role in this issue by requiring a regional comprehensive solid waste management plan for most, if not all of the area, served by this project. The development of such a plan in advance of or in concert with the approval of a landfill operation of this magnitude should be a very high priority.

Sincerely,

Bill Havert

Bill Havert
Conservation Coordinator

PD, T, A

SOLID WASTE MANAGEMENT DEPARTMENT
825 East Third Street • San Bernardino, CA 92415-0834 • (714) 387-2765

COUNTY OF SAN BERNARDINO
ENVIRONMENTAL
PUBLIC WORKS AGENCY

WILLIAM G. STERLING
Director

RECEIVED
SEP 07 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 1, 1989

David Mares
Planner III
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

RE: SPECIFIC PLAN NO. 252, ZONE CHANGE NO. S-499; COMPREHENSIVE GENERAL PLAN AMENDMENT NO. 209/EAGLE MOUNTAIN PROJECT

Dear Mr. Mares:

This letter is in response to your agency's Notice of Preparation for the referenced project. The Notice of Preparation does not indicate whether the inter-county solid waste issues listed below were included:

- Feasibility and potential impacts of accepting Municipal Solid Waste from County of San Bernardino.
- Importation of Municipal Solid Waste from other counties, through the County of San Bernardino.
- Traffic impacts to specific lines within San Bernardino County indentified as possible rail-haul routes.
- Possible waste control measures to limit disposal impacts from other counties and large commercial/industrial generators.

This department has no specific comments on the proposed scope of the Environmental Impact Report at this time. Please place this department on the mailing list for the Draft Environmental Impact Report. At that time, this department will provide comments on its analysis and recommendation.

I thank you for the opportunity to provide imput on the Environmental Impact Report. If you have any questions, please call me at (714) 387-2858.

Sincerely,

Martin Wilkins
Senior Associate Planner

cc: Michael Lerch, Land Management Department
Jeanie Blakesley, California Waste Management
Steve Ault, California Waste Management
Glenn Stober, Office of Planning and Research
State Clearing House

City Of Loma Linda

25541 Barton Road, Loma Linda, California 92354 • (714) 799-2830 • FAX (714) 799-2891

From The Department Of Community Development

September 7, 1989

RECEIVED
SEP 11 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

David Mares, Planner III
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Subject: NOP for Specific Plan 252

Thank you for the copy of the NOP referenced above.

The City of Loma Linda is concerned with the impact this project could have on the Southern Pacific Railroad lines through the City. Our main concerns would be:

1. The number of new trips per day generated by this project.
2. Time of day they would occur.
3. Length of trains.
4. Types of waste or recycled materials being transported through the City.
5. Type of railroad cars to be used.
6. A risk assessment for possible accidents involving the railroad and gas lines that are adjacent to the railroad tracks.

We would appreciate receiving the draft EIR when it is available.

Sincerely,

Mark R Pywell

Mark R. Pywell
Senior Planner

MRP;pr

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2711
LOS ANGELES, CALIFORNIA 90053-2325

September 7, 1989

RECEIVED
SEP 14 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

REPLY TO
ATTENTION OF

Office of the Chief
Environmental Resources Branch

Mr. David Mares
Project Planner
Riverside County Planning Department
4080 Lemon Street
Riverside, California 92501

Dear Mr. Mares:

We have reviewed the Notice of Preparation of a Draft Environmental Impact Report (DEIR) for the Eagle Mountain Project, dated August 15, 1989.

Our responsibilities include investigation, design, operation and maintenance of water resource projects, including preparation of environmental guidelines in the fields of flood control, navigation and shore protection.

We are responsible also for administration of laws and regulations against pollution of the waters of the United States. We believe the forthcoming document should address the above-listed responsibilities.

Work in waters of the United States might require a permit under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. We cannot determine from the submitted information the extent of the Corps' jurisdiction over this project. Please give our Regulatory Branch documentation that clearly describes the area and extent of any proposed work in watercourses and adjacent wetlands to help us make that determination.

If the proposed project involves any Federal assistance through funding or permits, compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f) and implementing regulations, 36 CFR 800, will be required.

Please feel free to contact this office for any data that can help you prepare the projected document. The contact person for this project is Jim Myrtetus, telephone (213) 894-5423.

We will appreciate an opportunity to review and comment on the proposed DEIR when it is issued.

Sincerely,

Ruth Bajza Villalobos

for Robert S. Joe
Chief, Planning Division

PD, A. S,

CITY OF CULVER CITY
9770 CULVER BOULEVARD • P.O. BOX 507
CULVER CITY, CALIFORNIA 90230-0507

RECEIVED
SEP 21 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 7, 1989

Mr. Roger S. Streeter, Planning Director
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

ATTN: David Mares

SPECIFIC PLAN NO. 252, ZONE CHANGE NO. 5499, COMPREHENSIVE GENERAL PLAN AMENDMENT NO. 209; EAGLE MOUNTAIN PROJECT

Dear Mr. Streeter:

Thank you for the opportunity to comment on the Notice of Preparation for the above-referenced project.

It is requested that you list the criteria to be used for the selection of transfer stations throughout the Los Angeles County region. Additionally, those criteria should insure the possibility that such facilities are not located adjacent to or within close proximity to residential or environmentally sensitive areas.

It is also requested that you list the criteria to be used in selecting the railroad lines to be used in the transport of the waste material. Criteria should be developed that will allow the maximum safety concerns and protection to the surrounding area.

Please identify the environmental and economic benefits of utilizing railroad transit of waste material, as opposed to other methods of transit (i.e., truck).

If you have any questions, please contact Jackie Freedman, Project Planner, at 213/202-5777.

Sincerely,

Jay B. Cunningham

Jay B. Cunningham
City Planner

JBC:JF:ee

Copy: Mark Gauerke, Resource and Sanitation Manager
Jackie Freedman, Project Planner

CR

RIVERSIDE COUNTY
PLANNING DEPARTMENT

CORRECTED
AGENCY NOTICE OF PREPARATION
OF
AN ENVIRONMENTAL IMPACT REPORT

RECEIVED IN
ARU

AUG 18 1989

DATE: August 15, 1989

TO:
UCR Archaeological Research Unit
900 University
Riverside, CA 92507

PROJECT CASE NO./TITLE:

Specific Plan No. 252, Zone Change No. 5499, Comprehensive General Plan Amendment No. 209/Eagle Mountain Project.

PROJECT SPONSOR:

Mine Reclamation Corporation
550 N. Brand Blvd. 8th Floor
Glendale, CA. 91203

PROJECT DESCRIPTION:

A proposed regional Class III solid waste disposal site (sanitary landfill) combined with the storage, fabrication and sales of recyclable material; the repair and maintenance of railroad equipment, facilities, and rail cars used to transport waste to the site, landfill gas recovery and utilization, composting, leachate processing, renewal of mining operations, the continuance and/or expansion of existing residential and commercial land uses, and the continuance and/or expansion of the Return-to-Custody facility.

Collection of waste material is to occur primarily within the Los Angeles metropolitan area, at waste transfer station locations not yet determined; with other possible locations situated in the Southern California region. Transport of waste material is proposed to occur along various Southern Pacific rail routes throughout Southern California, and will be dependant on the location of the transfer station. It is anticipated that the disposal site, when operating at maximum operational capacity, will receive six (6) trains daily.

PROJECT LOCATION:

Portions of the Western and Central Chuckwalla Zoning Area located approximately 10 miles northwest of the community of Desert Center and approximately 1/4 mile south of Joshua Tree National Monument. The site covers, approximately 9,800 acres within the Eagle Mountains, and was previously known as the Kaiser Eagle Mountain Iron Mine.

The project proposes to establish several waste transfer stations within the Los Angeles metropolitan area, and possibly others in the Southern California region. Because specific locations have not yet been established, this project will not specifically address the waste transfer stations. Furthermore, any contemplated transfer stations will require review and approval by that individual city or county which has jurisdiction over that particular station's location. It is proposed that transport of the waste material will be via Southern Pacific rail routes throughout Southern California. At this time it is infeasible to determine which rail routes will be used, since the location of the transfer stations have not been finalized, and additional stations could be added later.

Pursuant to the Riverside County Rules to Implement the California Environmental Quality Act, notice is given to responsible and interested agencies, that the Riverside County Planning Department plans to oversee the preparation of an Environmental Impact Report for the project. The purpose of this notice is to solicit guidance from your agency as to the scope and content of the environmental information to be included in the EIR. Information in that regard should be submitted to this office as soon as possible, but not later that 30 days after receiving this notice.

9/14/89

Attached is a copy of the issues to be included in the draft EIR. If you have any questions, please contact David Mares, Project Planner, at (714) 787-2140.

Very truly yours,

RIVERSIDE COUNTY PLANNING DEPARTMENT
Roger S. Streeter, Planning Director

David Mares
David Mares, Planner III

A survey for cultural resources is recommended.

9/8/89

EASTERN INFORMATION CENTER
Archaeological Research Unit
University of California
Riverside, CA 92521

RECEIVED S, W, AQ

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

SEP 08 1989

RIVERSIDE COUNTY
PLANNING DEPARTMENT

MRC

Mr. David Mares, Project Planner
Riverside County Planning Department
4080 Lemon Street 9th Floor
Riverside, California 92501

Dear Mr. Mares:

Notice of Preparation
of Environmental Impact Report
Eagle Mountain Solid Waste Disposal Facility

We have received your Notice of Preparation for the above-referenced project. The proposed project would entail development of a regional Class III solid waste disposal facility in the Eagle Mountains northwest of Desert Center. The project would require approval of a general plan amendment, zoning change, and specific plan. The comments herein represent Metropolitan's response as a potentially affected public agency.

Our review of the project site indicates that Metropolitan's Colorado River Aqueduct lies in close proximity to the proposed project location. The aqueduct is a major source of imported drinking water for Metropolitan's service area of 14.7 million people.

Since the aqueduct is an open water conveyance in the vicinity of the proposed project, water quality is a concern that should be addressed in the EIR. Specific concerns include the possible attraction of birds to the dump, and consequently to the nearby aqueduct, one of the few water sources in the area. Possible impacts on aqueduct water quality from wind-blown contaminants should be investigated. The effects on groundwater underlying the site should also be addressed.

We appreciate the opportunity to provide input to your environmental planning process. Questions regarding Metropolitan's facilities or rights-of-way should be directed to Mr. James Hale, Senior Engineering Technician at (213) 250-6564. Water quality questions should be addressed to Mr. Edward Means, Associate Director of Water Quality, at (213) 250-6412.

Very truly yours,

Roberta L. Soltz, Ph.D.
Environmental Branch Head

JMG/ms

PD.A.G

STATE OF CALIFORNIA—THE RESOURCES AGENCY

GEORGE DEUKMEJIAN, *Governor*

DEPARTMENT OF CONSERVATION
DIVISION OF ADMINISTRATION
DIVISION OF MINES AND GEOLOGY
DIVISION OF OIL AND GAS
DIVISION OF RECYCLING

1416 Ninth Street
SACRAMENTO, CA 95814
TDD (916) 324-2555
ATSS 454-2555
(916) 445-8733

RECEIVED
SEP 18 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 12, 1989

Mr. David Mares
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Dear Mr. Mares:

Notice of Preparation (NOP) for the Eagle Mountain Project
SCH# 89081413

The Department of Conservation's Division of Mines and Geology (DMG) has reviewed the document submitted for Mine Reclamation Corporation's Eagle Mountain Project at the former Kaiser Steel Eagle Mountain Iron Mine site. We have the following comments on reclamation and mineral issues.

RECLAMATION -- The Surface Mining and Reclamation Act of 1975 (SMARA) and the State Mining and Geology Board regulations for surface mining and reclamation practice (California Code of Regulations (CCR) [formerly California Administrative Code (CAC)], Title 14, Chapter 8, Article 1, Sections 3500 et seq.) require that the reclamation plan for a mining operation identify proposed or potential future uses of the mine site upon the termination of the mining. The reclamation plan for the former Kaiser Steel mining operations should be reviewed to determine if the subject project is consistent or compatible with the goals of the plan. If not, the reclamation plan should be amended to allow the uses proposed in the Mine Reclamation Corporation's Eagle Mountain Project.

In reviewing the Mine Reclamation Program files, it is noted that this Department never received a copy of the approved reclamation plan for the Kaiser Steel mining operations, as required by CCR. As such, we cannot evaluate or comment on the issue discussed above.

Also, please send a copy of the approved reclamation plan for the Kaiser Steel Eagle Mountain Iron Mine to the Mine Reclamation Program Office at 650-B Bercut Drive, Sacramento, CA 95814, pursuant to Section 2778 of the Surface Mining and Reclamation Act.

MINERALS -- The planned use of the former Kaiser Steel Iron Mine, located on the site, represents a potential loss of a mineral resource. The current resource potential of the site should be assessed, as well as the economic value of this and adjacent deposits, as a source of raw materials for the cement industry both now and in the future. Regionwide sources of similar minerals should be identified, and their availability analyzed. Should the loss of the Eagle Mountain resources be found to be significant, mitigation measures should be developed.

If you have any questions, please feel free to contact me at (916) 322-5873.

Sincerely,

Dennis J. O'Bryant

Dennis J. O'Bryant
Environmental Program Coordinator

DJO:efh

cc: James Pompy, DMG
Zoe McCrea, DMG

AQ, W, B, AtR, N, PD

United States Department of the Interior

NATIONAL PARK SERVICE
JOSHUA TREE NATIONAL MONUMENT
74485 NATIONAL MONUMENT DRIVE
TWENTYNINE PALMS, CALIFORNIA 92277-3597

IN REPLY REFER TO:

RECEIVED
SEP 14 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 12, 1989

Riverside County
Planning Department
4080 Lemon Street, 9th Floor
Riverside, California 92501
David Mares, Project Planner

Dear Mr. Mares,

Joshua Tree National Monument has received a Notice of Preparation for an Environmental Impact Report from the Riverside County Planning Department for the Eagle Mountain Specific Plan, dated August 7, 1989, and a corrected Notice of Preparation dated August 15, 1989. Additionally, on September 1,1989 Bob Moon Chief of Resources Management for the Monument and I attended the scoping meeting in Riverside. We did provide oral input on several issues. However, to insure consideration of what we feel are extremely critical potential impacts to adjacent Park Service lands we have developed the following list of issues for consideration in the impact report.

The proposed landfill is less than one mile from the Monument's boundary and adjacent to the 92,000 acre Pinto Basin wilderness unit.This unit represents the most pristine example of Colorado Desert ecosystem under wilderness protection.

Issue 1. Air Quality
The Pinto Basin is a designated mandatory Class I air quality zone. Air quality related values include visibility of vistas to include definition of detail as well as color. In addition to concerns for compliance with Class I health related standards, visibility of dust or smoke from within the wilderness unit will have an adverse impact on the experience of wilderness users in this area.

Issue 2. Water Quality
Water quality issues are directly related to potential effects on springs in the Eagle Mountains utilized by wildlife such as bighorn sheep. In addition to water quality, potential impacts on availability of water in natural aquifers that are often isolated and unpredictable are also of concern.

Issue 3. Bighorn Sheep

During the years that the mine was in operation sheep in the Eagle Mountains adjusted to the activities of the mining. However, during the years that mining has been abandoned sheep may have returned to travel corridors between lambing areas, water sources and foraging areas. In addition to impacts on movement, changes in other local wildlife populations such as coyotes may further impact sheep behavior.

Issue 4. Raven Populations

The raven has been implicated in the loss of tortoises in the California desert. While raven predation may be natural under normal conditions, raven population explosions around landfills create a potential disaster for tortoises. A tortoise survey conducted in the Monument recently identified the Pinto Basin as one of the most significant population sites in the Monument for this Federally listed species.

Issue 5. Coyote and Kit Fox Behavior

Coyotes are one of the most adaptable desert omnivores subject to dramatic changes in behavior due to human influences. Coyote readily scavenge from human developments when the opportunity presents itself. Currently, Pinto Basin coyote populations are part of a relatively unaltered biological community. The presence of refuge and/or other animal life in the landfill could create significant impacts on coyote and kit fox as well as the natural system that has coevolved with them.

Issue 6. Light pollution.

The relative darkness of the eastern night sky in the Pinto Basin is a significant resource value to backcountry users. Night operations and the burning of waste methane could have significant impacts on the quality of visitor experiences.

Issue 7. Airborne Litter.

Litter is a blight on any landscape, however in a wilderness setting it is a violation of the congressional act creating and directing the management of these most reserved of all public lands. Late summer storm patterns which bring subtropical thunder storm activity out of the southeast will deposit debris, lifted by 40 to 60 mile an hour winds, directly into the Pinto Basin. Even during calm days temperature differentials create dust devils capable of lifting paper thousands of feet aloft is a matter minutes.

Issue 8. Noise and Smell.

Noise and smells from the landfill could represent another potential violation of the wilderness act that provides protection from "the hand of man." This problem would be most significant during the winter months when cool damp air providers ideal transmission of both sound and smells. Unfortunately, this is exactly when visitors find the wilderness of the Pinto basin most attractive.

Issue 9. Monitoring and Mitigation
In addition to the potential impacts described above, there is the question of how impacts will be monitored and what steps will be taken to mitigate these impacts once detected. It's one thing to determine in a report that a given concern will not create unacceptable impacts, but follow-up monitoring to validate these conclusions must be a part of the program. Annual census studies of wildlife is one way to monitor effects and develop mitigation efforts. However, how will debris blown into the wilderness be monitored? As wilderness, no motorized transportation is permitted. Who will conduct foot patrols over this 92,000 acre unit to monitor compliance?

Rick Anderson

Rick Anderson
Superintendent

cc: J. Huddleston, WRO

PD,A.S

STATE OF CALIFORNIA—STATE LANDS COMMISSION
GEORGE DEUKMEJIAN, *Governor*

STATE LANDS COMMISSION
245 WEST BROADWAY, SUITE 425
LONG BEACH, CALIFORNIA 90802
TELEPHONE: (213) 590-5201

RECEIVED
SEP 18 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

File Ref.: PRC 5678
SD 89-08-23

September 13, 1989

Mr. David Mares
Planning Department
Riverside County
4080 Lemon Street, 9th Fl.
Riverside, CA 92501

Subject: NOP Draft EIR for Specific Plan 252
Eagle Mountain Project
SCH 89081413

Dear Mr. Mares:

This is to advise that the State Lands Commission staff has determined that there are State interests in certain parcels within the area of the Eagle Mountain project of the Mine Reclamation Corporation. In particular, a State mineral extraction lease issued to Kaiser Steel Corporation for a portion of Section 36, T3S, R14E, SBM, is in existence and may be impacted by the proposed project. The other parcels of State interest will be identified in further correspondence with your office.

Please send any notices and copies of CEQA documents to the following office of the State Lands Commission as well as to the Sacramento Office:

State Lands Commission
245 West Broadway, #425
Long Beach, CA 90802
ATTN: Mr. D. J. Everitts

Yours truly,

ALEX E. GONZALEZ
Senior Mineral
Resources Engineer

AEG:vn:D63#18

20 Oct 89

IN RE: "THE TRASH TRAIN"

Dear Russ,

John Kiley [illegible]

② The BLM State Office-Legal Section has advised me to write to you in regard to having my name placed on your office's mailing list for Bureau generated documents, studies, easement amendment applications, E.A.'s and or E.I.S. drafts, etc., in regard to the trash train proposal at Eagle Mountain.

③ I would also like to receive a copy of the proposed wilderness designations that are due to be forwarded to Congress, but only those within the Indio and El Centro Resource Areas. As a true believer in the multiple use methodology put forth in the Desert Plan and also believe that the public lands administered by and through the BLM are best left that way and not placed in the hands of the lunatic fringe of the supporters of the idiotic Cranston Plan.

Thanking you in advance for your co-operation, I am,

Sincerely
Ron Ackert
RON ACKERT
PO BOX 3251
NORTH SHORE, CA 92254-0986

STATE OF CALIFORNIA

GEORGE DEUKMEJIAN, *Governor*

STATE LANDS COMMISSION

LEO T. McCARTHY, *Lieutenant Governor*
GRAY DAVIS, *Controller*
JESSE R. HUFF, *Director of Finance*

EXECUTIVE OFFICE
1807 - 13th Street
Sacramento, California 95814

CLAIRE T. DEDRICK
Executive Officer

RECEIVED
OCT 02 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

File Ref.: PRC 5618
SD 89-08-23

September 27, 1989

Mr. David Mares
County of Riverside
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Dear Mr. Mares:

Staff of the State Lands Commission (SLC) has reviewed the Notice of Preparation for a Draft Environmental Impact Report for the Mine Reclamation Corporation's Eagle Mountain Project and offer the following comments in addition to those we made dated September 13, 1989 (copy enclosed).

SLC Jurisdiction

The project appears to involve the following state-owned lands and interests in lands under the jurisdiction of the SLC.

SLC Parcel #	Description/Subdivisions	Interest	APN
233-011	T3S, R13E, S36, SBM; Lots 1, 2, 3, 4, 6, 7, 8	Full Fee	701-32-05, 06, 21, 22
233-577	T3S, R14E, S36, SBM; Lots 1-11, N2NW4, W2NE4	Reserved Minerals	701-38-06, 07, 15
236-540	T6S, R14E, S16, SBM; W2W2	Reserved Minerals	811-08-07
237-523	T7S, R12E, S36, SBM; SE4NW4	Reserved Minerals	719-13-02

These state-owned lands are part of the State's School Land Grant and are managed, by law, for the economic benefit of the State Teachers' Retirement System (STRS). A lease or permit will be necessary for their use in the proposed project.

As stated in our previous letter, a state mineral extraction lease to Kaiser Steel Corporation for a portion of Section 36, T3S, R14E, SBM already exists and may be impacted by the proposed project.

Content of the EIR

In general, it appears that the EIR proposed by the County will discuss all of the issue areas of concern to the SLC. However, the project description and purpose must be clear as to the transport, processing, storage and/or disposal of hazardous waste at the proposed site (III.B.22).

We appreciate the opportunity to comment and look forward to our review of the draft document. If you have any questions regarding SLC jurisdiction and permitting processes, please contact Alex Gonzalez in our Long Beach Office at (213) 590-5220 or Ed Chatfield in our Sacramento office at (916) 322-7821.

Sincerely,

Dwight E. Sanders

DWIGHT E. SANDERS, Chief
Division of Research
and Planning

DES:maa
Enclosure
cc: Claire T. Dedrick, Executive Officer
Lance Kiley, Chief, Division of Land Management and Conservation
Lisa Beutler, Manager, State Lands Section
Alex Gonzales

GJP

STATE OF CALIFORNIA—STATE LANDS COMMISSION GEORGE DEUKMEJIAN, *Governor*

STATE LANDS COMMISSION
245 WEST BROADWAY, SUITE 425
LONG BEACH, CALIFORNIA 90802
TELEPHONE: (213) 590-5201

File Ref.: PRC 5678
SD 89-08-23

September 13, 1989

Mr. David Mares
Planning Department
Riverside County
4080 Lemon Street, 9th Fl.
Riverside, CA 92501

Subject: NOP Draft EIR for Specific Plan 252
Eagle Mountain Project
SCH 89081413

Dear Mr. Mares:

This is to advise that the State Lands Commission staff has determined that there are State interests in certain parcels within the area of the Eagle Mountain project of the Mine Reclamation Corporation. In particular, a State mineral extraction lease issued to Kaiser Steel Corporation for a portion of Section 36, T3S, R14E, SBM, is in existence and may be impacted by the proposed project. The other parcels of State interest will be identified in further correspondence with your office.

Please send any notices and copies of CEQA documents to the following office of the State Lands Commission as well as to the Sacramento Office:

State Lands Commission
245 West Broadway, #425
Long Beach, CA 90802
ATTN: Mr. D. J. Everitts

Yours truly,

ALEX E. GONZALEZ
Senior Mineral
Resources Engineer

AEG:vn:D63#18

NI

CITY OF RANCHO CUCAMONGA Post Office Box 807, Rancho Cucamonga, California 91729, (714) 989-1851

RECEIVED
SEP 15 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 13, 1989

Mr. David Mares, Planner III
Riverside County
Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

SUBJECT: EAGLE MOUNTAIN PROJECT

Dear Mr. Mares:

Regarding project case number and tiles: Specific Plan No. 252, Zone Change No. 5499, Comprehensive General Plan Amendment No. 290/Eagle Mountain Project, the City of Rancho Cucamonga does not have any comments at this time. However, do to the potential sensitivity of such a project we (the City) would like to be kept informed of its status.

Thank you for the Notice of Preparation. Please keep us informed.

Sincerely,

COMMUNITY DEVELOPMENT DEPARTMENT
PLANNING DIVISION

Jeff M. Gravel

Jeff M. Gravel
Assistant Planner

JMG:sp

Mayor
Dennis L. Stout

Councilmembers
William J. Alexander
Deborah N. Brown
Charles J. Buquet II
Pamela J. Wright

City Manager
Jack Lam, AICP

NI

CITY OF INDUSTRY
Incorporated June 18, 1957

RECEIVED
SEP 15 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 13, 1989

Mr. David Mares
Project Planner
County of Riverside
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Re: **Specific Plan No. 252, EIR for the Eagle Mountain Class III Landfill**

Dear Mr. Mares:

The City of Industry has received your notice that an Environmental Impact Report (EIR) will be prepared for the above project. The purpose of this notice is to invite comments on the scope and content of the environmental information to be included in the EIR.

As indicated, the proposed solid waste landfill will be located near the Joshua Tree National Monument and is planned to be served by both rail cars and highway trucks alike. The City, being situated along two major rail lines, could potentially be a user of the facility and is thus interested in the success of the Eagle Mountain Project. Please keep us apprised of the project status.

In regards to the scope of the EIR, the City has no additional study requirements beyond those already stated in the project evaluation form.

Sincerely,

John J. Radecki, Jr.
City Engineer

JJR:JDB:slb

P.O. Box 3366, City of Industry, California 91744-3366
Administrative Offices: 15651 E. Stafford St.
(818) 333-2211

DESERT SANDS UNIFIED SCHOOL DISTRICT
BERMUDA DUNES
RANCHO MIRAGE
INDIAN WELLS
PALM DESERT
LA QUINTA
INDIO

Desert Sands Unified School District
82-879 Highway 111 • Indio, California 92201-5678 • (619) 347-8631 • FAX# 342-1265

September 14, 1989

RECEIVED
SEP 15 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT
DESERT OFFICE

Roger S. Streeter Planning Director
Attn: David Mares
County of Riverside Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Subject: Specific Plan No. 252, Zone Change No. 5499, GPA No. 209, Eagle Mountain Project

Dear Mr. Mares:

The Desert Sands Unified School District is severely over crowded and we are now unable to construct three school projects totalling 64 classrooms which will not be funded due to lack of state funding.

The subject project poses a significant impact on our district because the project is regional in nature. The commercial aspect of the project will not pay school fees although the commercial use will cover over 9,800 acres of use. The use will generate numerous jobs and indirect employment impacting the district without adequate funding for new schools. Our enrollment is 29% over capacity now and it will increase without new schools and continued development.

The Desert Sands Unified School District is extremely concerned with this project unless appropriate mitigation can be maintained. We would urge that the project provide financial mitigation for growth inducing impacts.

We are sending you a copy of our Capital Facilities Plan and Fee Justification Document which indicates that we have significant problems with providing adequate school facilities.

If you have any question, please don't hesitate to contact my office. Please notify us of the hearing date on the matter.

Sincerely,

Richard M. Beck

Richard M. Beck, Director
Facilities Planning and Development

RMB:sdb

THE CITY OF
POMONA
Development Department

RONALD H. SMOTHERS
Director

RECEIVED
SEP 22 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 17, 1989

David Mares, Planner III
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, Calif., 92501

RE: Notice of Preparation of the Environmental Impact Report-Specific Plan No. 252, Zone Change No. 5499, Comprehensive General Plan Amendment No. 209/Eagle Mountain Projects

Thank you for the opportunity to provide input into the above Notice of Preparation. The City of Pomona is keenly interested in participating in the environmental review process.

The following specific issues would be of concern to the City and should be addressed in the Draft Environmental Impact Report:

1. Traffic impacts - Long trains and frequent occurrence could impact grade crossings. What delays can we expect at crossings, at what speed will they travel, and at what times of the day? Can we expect funds to help mitigate impacts, i.e., assistance with overcrossings/undercrossings?
2. Odors/Leakage - Containers/cars should be odor/leakage-tight to prevent objectionable odors and fouling of easements.
3. Landfill Capacity - Will the City of Pomona be using this facility as local landfills close?
4. Are there any off-site storage sites proposed in or near the City of Pomona?

We look forward to reviewing the DEIR when it is available. If you have any questions regarding these comments, please contact Steve Tarvin at (714) 620 - 2191.

Sincerely,

Steve Tarvin

Wm. Steven Tarvin
Assistant Planner

WST/dsk

City Hall, 505 So. Garey Ave., Box 660, Pomona, CA 91769-3186, (714) 620-2191

City of Redlands

RECEIVED
SEP 21 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 18, 1989

David Mares, Planner III
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

RE: Response to Notice of Preparation for Specific Plan 252, Zone Change 5499, General Plan Amendment 209/Eagle Mountain Project

Dear Mr. Mares:

The City of Redlands is concerned about the transportation of hazardous waste materials through the City. Specifically, the potential for spills or accidents along the I-10 and the rail corridor through San Timoteo Canyon. This concern is especially critical because of the existing and/or planned residential development in these areas.

Also, how will various materials be contained to keep them from mixing during transportation?

The City would like to see the issue of hazardous waste transport, accident potential and emergency response planning thoroughly addressed in the Environmental Impact Report.

Thank you for the opportunity to respond to the Notice of Preparation. We look forward to receiving the Draft Environmental Impact Report.

Sincerely,

Jeffrey L. Shaw
Community Development Director

JLS/PAM/cvd

30 CAJON STREET, P.O. BOX 2090 • REDLANDS, CA 92373

STATE OF CALIFORNIA GEORGE DEUKMEJIAN, *Governor*

CALIFORNIA WASTE MANAGEMENT BOARD
020 NINTH STREET, SUITE 300
SACRAMENTO, CA 95814

RECEIVED
SEP 14 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

SEP 11 1989

Mr. David Mares
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Subject: NOP for County of Riverside Eagle Mountain Project,
SCH# 89081413

Dear Mr. Mares:

Staff of the California Waste Management Board (Board) has reviewed the NOP for the project cited above, and offer the following comments.

Scope and Content of the EIR

1. General

For guidance on the scope and content of the EIR, staff has attached a "Disposal Site EIR Checklist" of information which we recommend be included in the EIR.

2. Preliminary Identification of Environmental Issues

The NOP lists 12 preliminarily-identified categories of environmental issues to be discussed in the EIR. Board staff recommends the following specific issues be discussed in the EIR:

a. **Public Health and Safety**, including a discussion of OSHA requirements and the potential health and safety impacts on landfill workers and employees during the construction, operation, closure, and postclosure maintenance phases of the landfill's life cycle. Workers at particular risk of injury or health are the railcar off-loaders, heavy equipment operators, the "spotters" of hazardous wastes, and "traffic directors" around the active face.

Staff recommends the EIR discuss the potential health and safety risks to, and mitigation measures for, clients of the landfill (e.g., refuse truck drivers) and other visitors to the landfill .

b. **Hazardous Wastes**, including a discussion of the frequency and procedures for load-checking and identifying, isolating, handling, storing, and removing any hazardous wastes found at the active face or elsewhere on site.

c. **Maximum Permitted Daily Capacity**, including a clear statement of the daily maximum number of tons of wastes which will be accepted during the life of this project, procedures for the early daily closure of the landfill when the maximum permitted daily capacity has been reached, and the proposed alternate sites for disposal of remaining refuse once daily capacity has been reached.

d. **Liquid Wastes**, including a detailed discussion of the types, volumes, and toxicity or hazardousness of any liquid wastes to be accepted for pond disposal on site. Additionally, how will the existing sewerage system for the community of Desert Center and the project employees be redesigned for capacity to handle all the expected sewage to be generated?

e. **Vector Control**, including a discussion of the types of disease vectors (rodents, flies, mosquitoes, gulls) prevalent in the site area and expected at the landfill, and specific mitigation measures for control of each of the four groups of vectors listed here.

f. **Height Limits**, including a clear delineation of the absolute maximum heights allowed for each Waste Management Unit.

g. **Recycling, Reuse, Salvage, and Resource Recovery**, including a full discussion of all such activities at the site, their potential environmental impacts and mitigation measures, planned at the site in the short-, medium-, and long-term periods (5, 10, and 20 years).

h. **Encroachment**, including a discussion of the expected types of encroachment of non-compatible land uses (e.g., recreational, residential, or commercial zoning) near the landfill over the next 20 years, potential environmental impacts on both the landfill operations and the encroaching developments, and measures to be used to prevent or minimize potential encroachment around the landfill.

i. **Cost-effectiveness of Project and Alternatives**, including a discussion and data demonstrating the cost-effectiveness of the proposed project and all reasonable alternatives to the project, such as recycling, waste reduction, incineration, expansion of existing landfills, transfer stations, waste-by-rail, waste processing, composting, and resource recovery.

j. Aesthetics, including a discussion of the impact of light from night-time operations, and the impacts on tourism at Joshua Tree National Monument.

k. **Closure and Postclosure Maintenance**, including a discussion of the closure and post-closure maintenance requirements of AB 2448 (Eastin, 1988), this Board's new emergency regulations, and the financial mechanisms to fund the closure and post-closure requirements

l. **Transportation/Circulation**, including a discussion of the expected impacts of the maximum number of daily train trips on each of the train/grade crossings the waste trains will traverse, in relation to the residential, commercial, industrial and emergency response traffic patterns in the communities surrounding each crossing.

What is the estimated loss of business and public revenues and human life and property expected from the implementation of this transportation system? For example, based on current State and national train-vehicle accident rates, how many deaths may we expect from the implementation of this project? Based on current State and national statistics, how many deaths or other irreversable losses of human health and losses of property may be expected, statistically, from emergency vehicle (ambulance, fire, police, hazardous materials response) delays in the crossing of grades when occupied by these trains?

Monitoring Programs for CEQA Mitigation Measures. The failure to carry out mitigation measures for projects approved under CEQA is causing increasing concern. AB 3180 (Cortese, 1988) addresses this concern by requiring that a lead agency adopt a reporting or monitoring program for each mitigation measure required in the certified environmental document. Compliance with this law should be addressed in the EIR.

Board Regulatory Authority and Local Requirements

The project proponent will, among other requirements, need to:

a. Demonstrate compliance with the California Environmental Quality Act (CEQA);

b. Demonstrate the project is consistent with and designated in the applicable City or County General Plan, and obtain a finding from the applicable land-use planning agency that adjacent land uses are compatible with the proposed use of the site (Title 7.3, Government Code (GC), Section 66796.41);

c. Obtain a Finding from the County Board of Supervisors that the distance form the landfill to the nearest residential structures is sufficient to ensure compliance with the Board's State Minimum Standards, prior to the landfill's establishment (7.3 GC 66784.2).

d. File a Notice of Proposed Facility with the Riverside County Waste Management Department and this Board (Title 14, California Code of Regulations (CCR), Sections 17927-17929 and 17936);

e. Obtain a finding of conformance with the County Solid Waste Management Plan from the Riverside County Waste Management Department (14 CCR 17937);

f. Obtain Waste Discharge Requirements and any other permits as required under Federal, State or local laws and regulations.

Note, the project proponent may not construct or operate the project until (i) all requirements are met and (ii) until the LEA issues the Solid Waste Facilities Permit.

Thank you for the opportunity to review this material. If you have any questions concerning these comments, please contact Steven Ault of the Board's Local Planning Division, at (916) 327-0453.

Sincerely,

for John D Smith
George H. Larson, Manager
Resource Conservation and Local Planning Divisions

cc: Robert Nelson, Riverside County Waste Management Department
John Fanning, Riverside County, LEA
State Clearinghouse

Attachment: one

DISPOSAL SITE EIR CHECKLIST

I. GENERAL BACKGROUND INFORMATION

A. Project Location

B. Need for the Project

C. Area Served

D. Population Served

E. Population Projections

F. Existing Facilities

G. Conformance to County Solid Waste Management Plan

H. Regional Map

I. Designation in General Plan

II. PROJECT DESCRIPTION

A. Site Description

1. Topographic map showing site location
2. Size of the site (acres)
3. Site layout map (showing areas to be filled, sequence of filling, and property boundaries)
4. Total capacity of the site
5. Average quantity of waste to be received daily
6. Expected site life (years)
7. Current land use
8. Current zoning
9. All land use within 1000 feet of site boundaries -See Gov't Code Section 66784.2
10. Owner/operator of the Landfill
11. Classification of site (Class I, II, III etc.)

12. Classification of wastes to be received (Group 2, 3, etc.)

13. Ultimate end use of site

14. Maximum height of fill

15. Public and/or private use

16. Permits required by local and state agencies to implement the project - in sequence

B. Operations Description

1. Compliance with CWMB standards for handling and disposal (Title 14 CCR)

2. Method of disposal (area/trench/canyon)

    a) Construction of cells - height of cells, compaction

3. Depth of excavation

4. Maximum height of completed fill

5. Cover types - daily, intermediate

    a) Frequency of cover

    b) Thickness of cover

    c) Suitability of cover material

    d) Volume of cover material needed for the entire project

    e) Source and supply of cover - to end of site life

6. Anticipated waste compaction (lbs./cu. yd.)

7. Number & Job Titles of employees

8. Equipment - e.g. compactor, water truck, scraper, track dozer

9. Hours/days of operation - days/weeks of operation per year

10. Fire control provisions - on-site; nearest fire dept.

11. Vector control provisions - flies, rodents, birds, mosquitoes

12. Litter control provisions - fences, litter pick-up schedule

13. Traffic

    a) Access routes

    b) Present loading - project induced load

    c) On-site roads

14. Scales - number, weight limits, computerized recording

15. Odor control provisions

16. Dust control provisions

17. Record keeping

18. Erosion controls for wind, vehicular, run-on, run-off - e.g. berms, conduits, levees

19. Sedimentation controls - e.g. silt collection ponds

20. Landfill gas monitoring and quality assurance/quality control systems

21. Groundwater/Vadose zone monitoring sytems

22. Leachate controls

    a) Liner (if applicable)

        1. Permeability of liner (cm/sec)

        2. Sensitivity of line to acidic or caustic compounds

        3. Quality Assurance/Quality Control - installation

    b) Compaction of underlying soils

        1. Permeability achieved after compaction (cm/sec)

    c) Collection system

        1. Maximum gpm or gpd the system can handle: pumping, storage, disposal

    d) Recirculation

    e) Impermeable barriers

        1. Permeability of barrier (cm/sec)

    23. Leachate monitoring system

    24. Description of storage or disposal areas for bulky items

    25. Provisions for special wastes handled (e.g., liquids, sludge, etc.)

    26. Resource recovery provisions - salvaging

    27. Fencing and provisions for site security

    28. Police protection

    29. Drainage facilities and surface water routing

    30. Flood protection facilities

    31. Site improvements

        a) Water

        b) Bathroom and Shower

        c) Telephone

        d) Electricity and Gas

        e) Sewage disposal system - septic, sewer

C. Closure Procedures

    1. Final cover

        a) Thickness

        b) Permeability (cm/sec)

        c) Grading

    2. Revegetation

    3. Responsibility for maintenance

    4. Responsibility for monitoring

    5. Length of maintenance

    6. Closure/Post-closure maintenance fund

III. EXISTING ENVIRONMENT

A. Climate

1. Average precipitation
   a) Seasonal
   b) Annual
2. Seasonal temperaute range
3. Wind
   a) Direction - seasonal
   b) Velocity - seasonal
4. Evaporation rate
   a) Seasonal
   b) Annual

B. Air

1. Baseline air quality data
2. Existing vehicular emissions
   a) Landfill equipment
   b) Refuse vehicles
3. Projected vehicular emissions
   a) Landfill equipment
   b) Refuse vehicles
4. Evaporative emissions (from wastes disposed at site)

C. Surface Water

1. Existing surface waters (streams, rivers, etc.)
2. Drainage courses
3. Average seasonal flows
4. Greatest anticipated 24 hour or 6 day rainfall amount
5. Beneficial uses of waters - portable, agricultural, recreational

6. Water quality analysis - physical, organic, inorganic analyses

7. Watershed characteristics - sources, outflows

D. Subsurface Water

1. Existing subsurface water (aquifer, aquiclude, etc.)

2. Water quality analysis (from site specific tests)

3. Beneficial uses of waters

4. Location of private & public wells within 1 mile of site

5. Minimum depth of groundwater (from site specific tests) - seasonal

E. Geology

1. Description of subsurface strata (in place)

    a) Unified Soil Classification (CH, OH, etc.)

    b) Percent passing #200 sieve

    c) Liquid limit

    d) Plasticity index

    e) Underlying geologic formation - e.g. igneous, metamorphic, sedimentary

2. Permeability of soil (from field samples and not textbook figures)

3. Seismicity

    a) Faults underlying the site

    b) Estimate of seismic risk at the site (distance to nearest fault, maximum projected earthquake of the fault, etc.)

    c) Distance to nearest fault system

4. Boring logs (including boring locations)

5. Mineral deposits

F. Land

1. Descriptions of the site surface
2. Visibility from surrounding area
3. Maximum slopes on the site
4. Slope stability (recommended allowable cut)

G. Flora

1. Description of site flora
2. Vegetation which will require permanent removal
3. Relation between vegetation and slope stability and erodability
4. Rare and endangered flora

H. Fauna

1. Description of site fauna
2. Resident population of rodents and other vectors
3. Rare and endangered fauna

I. Noise

1. Background noise levels at and adjacent to the site
2. Location of noise receptors
3. Noise levels generated by landfill operation - peak and 8-hour maximum dB exposures in relation to OSHA regulations

J. Social

1. Growth inducement
2. Land use compatibility
    a) Zoning
    b) General plan compatibility
    c) Regional plan compatibility
    d) Adjacent land use

3. Aesthetics
    a) Viewshed impact

K. Historic
  1. Archaeological sites
  2. Historical sites

IV. IMPACTS, MITIGATIONS, AND IRREVERSIBLE IMPACTS

A. Climate
B. Air
C. Surface Water
D. Subsurface Water
E. Geology
F. Land
G. Flora
H. Fauna
I. Noise
J. Social
K. Historic
L. Human Health & Safety

V. ALTERNATIVES

A. Alternative locations reviewed (not an in depth analysis but a general description)
B. Transfer station for waste transport to another landfill
C. Resource recovery and/or processing, and disposal of residual wastes
D. Other alternatives
E. No project
F. Larger & smaller project

VI. SUMMARY

A. Brief summary of project and existing environment

B. Identification (by use of matrix, outline, table, etc.) of all projects impacts and their respective mitigation measures

VII. ORGANIZATION AND PEOPLE CONSULTED

A. Public meetings

B. Public response to the local project

C. Persons contributing to the report and their qualifications

D. Persons consulted

CITY OF RANCHO MIRAGE

RECEIVED
SEP 21 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 19, 1989

Mr. David Mares, Project Planner
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, California 92501

Dear David:

This letter is sent in response to your notice of scheduled meetings regarding the preparation of an environmental impact report on the proposed Eagle Mountain specific plan.

We ask that the County Planning Department consider adding an economic element to the environmental impact report. We believe that this element should include an analysis of the cost and benefits associated with this proposal. Specifically, we are interested in an elaboration of economic benefits to be derived from the operation of the Eagle Mountain land fill.

Also, we believe it's appropriate that the County include the option of retaining 50% of the financial benefits derived from the land fill operations for the construction of needed public improvements in Riverside County, east of the Banning pass.

Thank you very much for your consideration of this request.

Best regards,

Stephen Birbeck

Stephen Birbeck
Assistant City Manager for Economic Development

SB:bam
M8909193

69-825 HIGHWAY 111 / RANCHO MIRAGE, CA 92270 / (619) 324-4511

STATE OF CALIFORNIA—THE RESOURCES AGENCY GEORGE DEUKMEJIAN, *Governor*

DEPARTMENT OF FISH AND GAME
330 Golden Shore, Suite 50
Long Beach, California 90802
(213) 590-5113

RECEIVED
SEP 25 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 20, 1989

Mr. David Mares
County of Riverside
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Dear Mr. Mares:

We have reviewed the Notice of Preparation of an Environmental Impact Report (EIR) for the Specific Plan No. 252; Zone Change No. 5499; CGPA No. 209/Eagle Mountain Project for the development of a proposed regional Class III solid waste disposal site (sanitary land fill) within a 9,800 acre area within the Eagle Mountains, previously known as the Kaiser Eagle Mountain Iron Mine. Collection of waste material is to occur primarily within the Los Angeles metropolitan area at waste transfer stations not yet determined. Transport of waste material is proposed to occur along various Southern Pacific rail routes throughout Southern California. To enable our staff to adequately review and comment on this project the following information should be included in the Draft EIR:

1. A complete assessment of flora and fauna within the project area. Particular emphasis should be placed upon identifying endangered, threatened, and locally unique species. Of special importance is the threatened desert tortoise and the project area should be surveyed for the presence of these animals.

2. Documentation of direct, indirect, and cumulative impacts expected to adversely affect biological resources within and adjacent to the project site.

3. Discussion of mitigation measures proposed to offset impacts. If project impacts result in the loss of desert tortoise habitat such losses should be compensated at a rate not less than that derived by the compensation formula approved by the Department of Fish and Game and the Bureau of Land Management. Management of the landfill should include measures that would discourage foraging by ravens. Waste materials should be buried as soon as feasible to avoid attracting ravens to the site and waste containers at the site should be covered. The desert tortoise population is declining throughout its range due to several limiting factors and raven predation upon juvenile tortoise is one of the factors. Desert users should take all measures necessary to avoid increasing the raven population within the range of desert tortoise.

4. An assessment of the potential impacts that the approximately 200 truck trips per day to and from the landfill site may have on the desert tortoise population. We recommend that tortoise-proof fencing be provided on each side of the highway if the assessment indicates that tortoise mortality would occur.

The project as described does not detail the work proposed for streambed alteration activity. The project sponsor must identify specific streambed alterations and flood control structures proposed in order for the Department to properly comment on this document. The applicant should be aware that if mitigation measures are not provided in this document, the Department may require such mitigation measures through jurisdiction established under Fish and Game Code Sections 1601-1603.

Diversion, obstruction of the natural flow or changes in the bed, channel, or bank of any river, stream, or lake will require notification to the Department of Fish and Game as called for in the Fish and Game Code. This notification (with fee) and the subsequent agreement must be completed prior to initiating any such changes. Notification should be made after the project is approved by the lead agency.

Thank you for the opportunity to review and comment on this project. If you have any questions, please contact Jack L. Spruill of our Environmental Services staff at (213) 590-5137.

Sincerely,

Chuck Traver for.

Fred Worthley
Regional Manager
Region 5

CITY OF Riverside PLANNING DEPARTMENT • 3900 Main Street • Riverside, California 92522

MERLE G. GARDNER
Planning Director

PLANNING DIVISION
782-5371

BUILDING DIVISION
782-5361

RECEIVED

SEP 20 1989

RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 20, 1989

Mr. Roger Streeter
Planning Director
Riverside County Planning Department
4080 Lemon Street
Riverside, CA 92501

Attn: David Mares

Subject: Notice of Preparation of a Draft EIR for the Eagle Mountain Project

Dear Mr. Streeter:

At its September 19, 1989 meeting, the Riverside City Council reviewed the above-referenced Notice of Preparation and, by a unanimous vote, took the following action:

1. Concurred with the list of topics proposed to be addressed in the DEIR for the Eagle Mountain Project;

2. Recommended that a supplemental EIR be prepared at the time specific Southern Pacific rail routes are identified and that the City be given the opportunity to review and comment on this document particularly as specific routes may affect the City of Riverside; and

We look forward to reviewing the draft EIR when available. Should you have any questions regarding this matter, please contact Stephen J. Whyld, Deputy Planning Director, at 782-5658.

Very truly yours,

Merle G. Gardner

Merle G. Gardner
Planning Director

MGG/2824Y(2)/c

RECEIVED
SEP 25 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

County of Orange
ENVIRONMENTAL MANAGEMENT AGENCY
PLANNING

ERNIE SCHNEIDER
DIRECTOR, EMA

MICHAEL M. RUANE
DIRECTOR OF PLANNING

LOCATION:
12 CIVIC CENTER PLAZA
SANTA ANA, CA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

TELEPHONE:
(714) 834-4643
FAX #: 835-7425

SEP 20 1989

FILE NCL 89-84

David Mares, Planner III
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

SUBJECT: NOP for the Eagle Mountain Project

Dear Mr. Mares,

Thank you for the opportunity to respond to the above referenced item. The County of Orange has no comment at this time. However, we would appreciate being informed of any further developments.

If you have any questions or need to contact us, please call Kari Rigoni at (714) 834-2109.

Very truly yours,

Joan S. Golding, Manager
Advance Planning Division

By Kari G. Rigoni
Kari Rigoni, Sr. Planner

CH:tk(ldnc)
9092014513090

STATE OF CALIFORNIA

George Deukmejian, Governor

AIR RESOURCES BOARD
02 Q STREET
P.O. BOX 2815
SACRAMENTO, CA 95812

RECEIVED
SEP 25 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

September 20, 1989

Mr. David Mares
County of Riverside
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Dear Mr. Mares:

Notice Of Preparation - Riverside County
Specific Plan No. 252, Zone Change No. 5499,
CGPA No. 209/Eagle Mountain (SCH# 89081413)

We have reviewed the notice of preparation of a draft environmental impact report (EIR) for the Riverside County Specific Plan No. 252, Zone Change No. 5499, CGPA No. 209/Eagle Mountain Project. The notice of preparation states that the proposed project could result in detrimental effects on air quality. To enable adequate analysis of potential air quality impacts, we recommend that the draft EIR contain the following information:

1. A description of the proposed project including:

   a. Types and quantities of wastes to be handled;

   b. Technical information on storage, recycling, treatment, and disposal operations;

   c. Characterization of the landfill gas and any fuels to be used in the proposed project;

   d. Capacity and acceptance rate for the proposed sanitary landfill; and

   e. Expected date of start-up.

2. A description of the existing environmental setting at the proposed project site and adjacent areas including:

   a. Location;

   b. Meteorology and topography;

   c. Current background and onsite air quality, including information on ambient air concentrations of criteria and non-criteria pollutants;

d. Population distribution and the proximity of sensitive populations (e.g., residential areas, schools, hospitals);

e. Existing sources of air pollution in the vicinity of the proposed project; and

f. Identification of environmental pathways capable of bioaccumulating emissions.

3. An analysis of the potential air quality impacts due to proposed project activities including:

a. Construction of the project;

b. Vehicular traffic;

c. Operation of the sanitary landfill;

d. Transportation, storage, handling, treatment, recycling, or disposal of hazardous wastes; and

e. Accidental releases.

This analysis should include both criteria air pollutants for which ambient air quality standards exist and non-criteria air pollutants from the landfill and hazardous wastes. The analysis should also include estimates of average and highest controlled and uncontrolled emission rates of criteria and non-criteria air pollutants, and the basis for the assumptions and calculations used to determine these estimates.

4. An analysis of potential public exposure from the emission of non-criteria air pollutants.

5. A description of mitigation measures to minimize emissions. This discussion should include control equipment, process control, and other technical measures to reduce emissions of criteria and non-criteria air pollutants.

6. A description of similar emission sources proposed in California and the control requirements applicable to these sources.

7. Identification and description of all applicable federal, state, and local air pollution control regulations, and measures to comply with these regulations.

8. A description of alternatives to the proposed project and associated emissions of these alternatives.

We would also like to point out that the local air pollution control district may have jurisdiction over aspects of any proposed project and should have the opportunity to comment on material contained in the EIR.

We hope that a thorough discussion of the items listed in this letter will provide a better understanding of the air quality aspects of the proposed project and contribute to an effective EIR process. Thank you for the opportunity to participate in the preparation of this draft EIR. If you have questions regarding our comments or if we can be of further assistance, please contact Carole Cenci at (916) 322-6005.

Sincerely,

Jim Behrmann

Jim Behrmann, Manager
Toxics Program Support Section

cc: Mohsen Nazemi
South Coast AQMD

David Nunenkamp, OPR

STATE OF CALIFORNIA—BUSINESS AND TRANSPORTATION AGENCY
GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 11, P.O. BOX 85406, SAN DIEGO 92138–5406

September 22, 1989

11-RIV-177
2.2

David Mares
Riverside County Planning Department
46-209 Oasis Street, Room 304
Indio, CA 92201

Dear Mr. Mares:

Notice of Preparation of a DEIR for the
Eagle Mountain Project - SCH 89081413

Caltrans District 11 will probably not have a responsible agency role in the preparation of this EIR. We are interested, however, in the impacts of project generated traffic to Interstate Route 10 and State Route 177. The discussion of those impacts should include the potential conflict between increased vehicular traffic, primarily trucks, and bicycle riders.

Our contact person for this area is Richard Coward, Project Manager, Project Services Branch, (619) 237-7377.

Sincerely,

JESUS M. GARCIA
District Director

By M. Owen

JAMES T. CHESHIRE, Chief
Environmental Planning Branch

MO:yg

RECEIVED
SEP 25 1989
[illegible]
PLANNING DEPARTMENT
INDIO OFFICE

September 25, 1989

MRC/EAGLE MOUNTAIN
TRASH-BY-RAIL
DRAFT/FINAL EIR
PUBLIC COMMENT

Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501
Roger Streeter, Planning Director
Ron Goldman, Chief Planner
David Mares, Planner

Dear Gentlemen:

In a recent conversation, by telephone, with Dave Mares, we were told to submit comments to your office regarding the proposed "Trash-By-Rail/Eagle Mountain project. We are sending you concerns and comments which we, as residents of the San Gorgonio Pass and Coachella Valley, would like addressed in the draft and final versions of the Environmental Impact Report, as mandated by the California Environmental Quality Act. We find it incredible that the County of Riverside is even considering such an idea (for this type of project) for 100 years. Shipping Los Angeles Orange, San Diego, other? county trash through and to Riverside County for $10 to $30 million dollars a year is not a reason to put Riverside County "up for sale". $440,000 to the Desert Center area does not mean that we are all for sale. That trash will go through our communities daily! We reject the approval of the memorandum of understanding with Mine Reclamation Corp. by the Riverside County Board of Supervisors that declares the County's intention to permit the disposal of L.A. County waste at Eagle Mountain. We question their right to enter into such an agreement.

We are fully aware that serious public controversy, under CEQA, could and should reject this project. We would like to now state, for the record, that we oppose any type of refuse, waste, trash or rubbish, both so-called household or toxic/hazardous and radioactive from anywhere outside of Riverside County, by any means of transportation, through and to Riverside County, for any means of disposal, burial or incineration anywhere in Riverside County.

As of September 1, 1989, the Bureau of Land Management had not accepted the role as co-lead agency in the project, Mr. Mares said. Has that agency (BLM) now accepted? What is the name of the person in charge at the BLM? If the BLM is not yet on board or chooses not to become involved in the project, could you please send us that information? Who, from the County is in charge as lead and/or co-lead? What company will do the EIR? Who is in charge? Who hired the company for the EIR and who will pay the bill? Also, what initiated this project? Was it a study by someone or some agency? Was it Kaiser Steel Resources, Southern California Association of Governments, The Santa Fe Railway Company, the Mine Reclamation Corporation? Others? We would like the names of the persons and companies, dates of proposals and the proposals showing Riverside County sites and routes, as well as any other information explaining how this proposed project originated.

How does it happen that the San Gabriel Valley cities feel so positive about this "Trash-by-Train" proposition that they are already organizing cities along the way to sign up for the long haul?

This portion of our comments, questions and concerns should be included with the following numbered items in the draft and final EIR as Resident/Citizen public comment on the proposed project.

COMMENTS, QUESTIONS AND CONCERNS RE: TRASH BY TRAIN

1. State Department of Health Services officials recently reversed a decision requiring an EIR and approved plans to build a controversial toxic waste incinerator in Vernon, CA without an Environmental Impact Report. Who has final jurisdiction for the Mine Reclamation/Eagle Mountain trash by train proposal and could anyone for any reason dispense with the EIR?
2. Governor George Deukmejian and legislative leaders tentatively agreed on Sept. 5, 1989 to include incineration as part of a long term strategy to reduce solid waste in California by 50% before the year 2000. What guarantee will be provided that incineration will not become a part of "Trash by Train project now or in the future with Riverside County as the major holder of So. California trash if this project is approved?
3. Is there a plan for Los Angeles, Orange, SanDiego and other county trash, refuse etc. to be collected and separated at sites in Riverside County? or will trains be fully loaded upon entering Riverside Co.? We oppose Riv. Co. separation/loading sites.
4. Municipal refuse is known to contain toxic and hazardous materials, industrial, hospital and medical waste (some radioactive). By what method will this refuse be separated, identified and processed into non-toxic trash for transport to the Eagle Mountain site? Describe in detail, please.
5. Where will collection and separation sites be located?
6. What local, county, state, federal regulations will be used to insure (guarantee) that refuse is solid and non-toxic? Name the agencies that will monitor, inspect and have jurisdiction. How often will monitoring take place? What would the penalties be for violations? Please show plans for test wells and other monitoring devices at dump-site. We feel that once toxity shows up in test wells it is too late to stop further contamination.
7. Would Mine Reclamation use sub-contractors, under which jurisdiction, to collect, separate, monitor, load and transport refuse to Eagle Mt.?
8. To assure that this quick-fix, trash-by-rail scheme will not promote future trash accumulation (instead of curbing it) each city and county area producing refuse proposed for inclusion in this plan must submit recycling plans and ordinances based on current and projected population. Plans should reflect the entire time of contract for each city or county area. Projections should include breakdown in total tonnage of paper, plastic, glass, etc. Cities and counties not submitting recycling plans and trash projections should be refused access to the project.
9. All land-fills and dumps sooner or later produce toxic gases from decaying trash. How will toxic gas be eliminated from the Eagle Mt. site? How will flora and fauna and surrounding environment be affected? Describe in detail how gas will be eliminated from this site.
10. How would refuse be contained for shipment? Would containers be used only for trash transport or will other used be permitted on return trip?
11. Will chemical or other repellents be used? Will pesticides be required for insect and rodent control? for flies? Will pesticides be used on containers, rail cars, at collection, separation and loading sites and at dump-site at Eagle Mt. Please describe in detail.
12. Estimate in time loaded trains could be delayed on sidings or tracks in the San Gorgonio Pass and Coachella Valley areas. Explain and

describe occurances and describe in detail all impacts to immediate and surrounding areas.

13. Describe in detail the terms waste, trash, refuse, rubbish and list all ingredients per term.
14. In case of earthquake, train wreck/accident, fire, flood or other event causing rail transport stoppage enroute to dump, how will refuse be transported to Eagle Mountain site? Describe emergency plans for each event.
15. Cite least and worst case scenario for accident enroute to Eagle Mt. site. Give mitigation measures. Show response plan for all points enroute.
16. Cite least and worst case scenario for accident, ground water contamination, other air, land, water pollution and contamination to Eagle Mountain site and surrounding area. Give mitigation measures. Show response time.
17. Describe in detail responsibility and liability of Mine Reclamation Corp., BLM, Riverside County, Kaiser Steel Resourses, Southern California Association of Governments, Santa Fe Railway, San Gabriel Association of Cities, County, State, Federal Government agencies should the Public and/or the environment be damaged by any or all phases of this project. Show liability and responsibility for each year of total contract including dollar figures for each entity for each year.
18. In case of damage to public or environment, now or in the future, a pool of money must be on hand so that work for clean-up is not delayed while various parties and agencies quibble about who is going to pay. The tax-paying public should not be responsible for clean-up of the environment or damage to the public resulting from any phase of the trash-by-train project including contamination on or off site at Eagle Mountain and its impact on surrounding communities and desert environs. Show individual assets of all companies involved and how much will beset aside for this fund by each one.
19. Is a similar proposal for trash-by-train at the Morongo Indian Reservation at the eastern limit of the city of Banning a part of this project? If so, please describe and explain.
20. What tonnage per day will be transported and deposited at the beginning of project? What estimate of tonnage per day in 100 years at end of project?
21. The Riverside County backed Pass Area Community Plan, now in development, should be included in all trash-by-train studies and decisions.
22. Bullet train and Commuter service on existing rail lines is now being studied and proposed for So. California. Railroad rights of way are being considered for purchase for this purpose. Residents of the San Gorgonio Pass and the Coachella Valley strongly support commuter rail service linking the desert to communities on the coast and to the north and south. They much prefer riding those rails themselves rather than watching L.A. trash take the ride near their homes. Describe in detail how the Mine Reclamation/Eagle Mountain trash-by-train will impact future commuter-rail routes and services.
23. Will trash cars be added to trains already travelling or will they be on trains for the specific purpose of hauling trash?
24. Describe how this will impact future oommuter service and proposed bullet train service if trash"trains do their hauling at night, empty their loads, then return for more trash in an endless chain" as stated in a recent Los Angeles Times front page story. Show impact of constant shaking and effect on foundations of homes and commercial buildings and the Westinghouse nuclear facility. Describe impact to cities with housing in close

proximity to those tracks. What effect will this have on property values? What will be done to lesson noise pollution?

25. This Draft and Final EIR should require input from all cities on route. All comments should be carefully considered before making a decision on this project.
26. Describe in detail how trash-by-train will impact missles-by-rail now being developed by the Department of Defense. Give estimates for impact and mitigation for 100 year period.
27. Describe in detail impacts to the California Desert Protection Act (as proposed) and other desert conservation and wilderness projects now in place or proposed for the future. We request that Jim Dobson, Director, California Desert Protection League, Los Angeles; Alan Cranston, U.S. Senator, CA.; The National Park Service; and Jeff Widen, California Desert Coordinator of the Sierra Club be contacted for input into the EIR.
28. Are existing rights of way to be used for trash-by-train, or will new routes and tracks be needed?

Thank you!

Sincerely,

Dollie M. Irwin
Dollie Irwin
420 N. Morongo
Banning, CA 92220

Carolyn Toenjes
Carolyn Toenjes
1863 Park Drive
Palm Springs, CA 92262

OFFICE OF ROAD COMMISSIONER & COUNTY SURVEYOR

County of Riverside
ROAD AND SURVEY DEPARTMENT

COUNTY ADMINISTRATIVE CENTER
MAILING ADDRESS:
P.O. BOX 1090
RIVERSIDE, CALIFORNIA 92502
(714) 787-6554

LeRoy D. Smoot
ROAD COMMISSIONER & COUNTY SURVEYOR

RECEIVED
AUG 17 1984
RIVERSIDE COUNTY
PLANNING DEPARTMENT

August 14, 1984

Mr. Roger S. Streeter, Planning Director
County Administrative Center
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Attention: Mr. David Mares, Planner III

RE: CGPA No. 209/COZ No. 5499
SP No. 252/Eagle Mountain
Project/NOP

Dear Mr. Mares:

The Riverside County Road Department, Road Planning Division has received your Notice of Preparation for the above referenced project. Please include the following information in the DEIR.

1. The GVW of the trucks and railroad cars to be used on the circulation network.
2. Depict on the map the points of egress, ingress, and all off-site haul routes on the County roads.
3. Study shall identify and depict all mitigative measures including reclamation plans for the proposed site.
4. Peak season trips, the amount of projected trips per hour within a twenty four hour day.
5. A detailed traffic study of existing and future Average Daily Traffic Volumes, including peak hours, and Intersection Capacity Utilization Analysis of any intersection within one mile of the proposed site.
6. Discuss the future proposed uses on the property and the impact on the street system.

Care should be taken when developing the property to preserve and perpetuate the existing drainage pattern of the County road.

Any work conducted within the County road right-of-way will require an encroachment permit.

If you have any questions regarding this matter, please contact John Goodlett at (714) 787-1445.

Yours truly,

Lawrence A. Toerper

Lawrence A. Toerper
Road Division Engineer

LAT:jw

BREA
CALIFORNIA
City of Brea

RECEIVED
AUG 21 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

August 16, 1989

Mr. David Mares, Planner III
Riverside County Planning Department
4080 Lemon St. 9 th Floor
Riverside, Ca. 92501

Dear Mr. Mares,

We would like to thank you for the opportunity to review the Notice of Preparation of the Environmental Impact Report for Specific Plan No. 252, Zone Change No. 5499, Comprehensive General Plan Amendment No. 209/ Eagle Mountain Project. The scope of the EIR as outlined in the NOP appears adequate, and we are looking forward to receiving a copy of the Draft EIR when it becomes available. Thank you again.

Sincerly,

Jennifer Lilley

Jennifer A. Lilley
Planning Intern

Civic & Cultural Center • Number One Civic Center Circle • Brea, California 92621-5758 • 714/990-7600 • FAX 714/990-2258

RECEIVED
AUG 21 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

SOUTHERN CALIFORNIA gas COMPANY

1981 LUGONIA AVENUE, REDLANDS, CALIFORNIA

MAILING ADDRESS: P. O. BOX 3003, REDLANDS, CALIFORNIA 92373-0306

August 17, 1989

Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverisde, CA 92501

ATTENTION: David Mares

RE: Specific Plan #252

The Southern California Gas Company has a gas main in Kaiser Road near the project. Distribution lines could be extended from these mains to serve the proposed development without any significant impact on the environment. The service would be in accordance with the Company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the California Public Utilities Commission. We can also be affected by actions of federal regulatory agencies. Should these agencies take any action which affects gas supply or the conditions under which service is available, gas service will be provided in accordance with revised conditions.

Typical demand use for:

a. Residential (System Area Average/Use Per Meter) Yearly

Single Family	799 therms/year dwelling unit
Multi-Family 4 or less units	482 therms/year dwelling unit
Multi-Family 5 or more units	483 therms/year dwelling unit

These averages are based on total gas consumption in residential units served by Southern California Gas Company, and it should not be implied that any particular home, apartment or tract of homes will use these amounts of energy.

b. Commercial

Due to the fact that construction varies so widely (a glass building vs. a heavily insulated building) and there is such a wide variation in types of materials and equipment used, a typical demand figure is not available for this type of construction. Calculations would need to be made after the building has been designed.

To insure the existing facilities are adequate to accommodate the new development, an engineering study will be required. Detailed information including tract maps and plot plans must be submitted to the Gas Company Market Services Representative, 1-800-624-2497, six months prior to the actual construction of the natural gas pipeline.

We have developed several programs which are available, upon request, to provide assistance in selecting the most effective applications of energy conservation techniques for a particular project. If you desire further information on any of our energy conservation programs, please contact our Area Market Services Manager, P.O. Box 3003, Redlands, CA 92373-0306, phone 1-800-624-2497.

Sincerely,

RLBaughman

Roger L. Baughman
Technical Supervisor

RLB:vjs

cc: Environ Affairs - ML209B

LAND MANAGEMENT DEPARTMENT

North Arrowhead Avenue • San Bernardino, CA 92415-0180 • (714) 387-40[illegible]

COUNTY OF SAN BERNARDINO
ENVIRONMENTAL
PUBLIC WORKS AGENCY

JOHN N. JAQUESS
Land Management Director

OFFICE OF PLANNING
Sharon W. Hightower
County Planning Officer

OFFICE OF SURVEYOR
Claude D. Tomlinson, L.S.
County Surveyor

OFFICE OF BUILDING AND SAFET
Larry L. Schoelkopf, P.E.
County Building Official

NI

RECEIVED
AUG 21 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

August 17, 1989

David Mares, Planner III
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Subject: Notice of Preparation (NOP) of a Draft Environmental Impact Report on the Eagle Mountain Project

Dear Mr. Mares,

We have reviewed the Notice of Preparation for the Eagle Mountain Project, which is stated to include a Specific Plan, a General Plan Amendment, and a Zone Change. The proposed project involves a regional Class III solid waste disposal site and recycling facility with associated operations, a railroad equipment maintenance and repair center, renewal of mining operations, and the continuance/expansion of existing uses in the 9,800-acre project area. The NOP does not indicate whether approval or modification of a mining reclamation plan pursuant to the Surface Mining and Reclamation Act is also being requested.

We have no comments on the proposed scope of the EIR at this time, although it is unclear whether some of the information items discussed in Section V of the Environmental Assessment (e.g., cultural and paleontologic resources) are to be addressed in the EIR, as they are not listed in the "Summary of Potential Environmental Impacts" table. When the Draft EIR is circulated, we will provide comments on its analysis and recommendations, both from this and from other affected County departments. Please place this office on your mailing list for the Draft Environmental Impact Report. We would appreciate receiving two copies of the Draft EIR and all supporting documents, if possible.

Thank you for the opportunity to comment on the Notice of Preparation. We look forward to reviewing the Draft EIR.

Sincerely,

OFFICE OF PLANNING

Michael K Lerch

MICHAEL K. LERCH, SENIOR PLANNER
ENVIRONMENTAL ANALYSIS TEAM

cc: John Jaquess, Land Management Department
Sharon Hightower, Planning Officer
William Sterling, Solid Waste Management Department

CITY OF BRAWLEY

CITY HALL
400 MAIN ST. · PLAZA PARK
BRAWLEY, CALIFORNIA
92227
PHONE: 344-1550

RECEIVED
AUG 25 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

August 22, 1989

David Mares, Planner
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Subject: Notice of Preparation for Draft EIR
for Eagle Mountain Project

Dear Mr. Mares:

The Brawley Department of Economic and Community Development has reviewed the Notice of Preparation for the Eagle Mountain Project Draft Environmental Impact Report.

The Department is concerned with two items, impacts from increased rail traffic and impacts on air quality in the Southeast Desert Air Basin, both of which have been identified in the environmental assessment.

We appreciate the opportunity to comment on this project and look forward to reviewing the Draft EIR for a more completed impact analysis.

Sincerely,

Mary Beth Ormsby,
Community Development Planner

MBO:mnv

SAN BERNARDINO COUNTY MUSEUM

4 Orange Tree Lane • Redlands, CA 92374
(714) 792-1334 • 792-0052 • 825-4825 • 825-4823

COUNTY OF SAN BERNARDINO
GENERAL SERVICES AGENCY

DR. ALLAN D. GRIESEMER
Director

RECEIVED
AUG 28 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

August 22, 1989

David Mares, Planner III
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, CA 92501

re: SPECIFIC PLAN NO. 252, ZONE CHANGE 5499, COMPPREHENSIVE GENERAL PALN AMENDMENT NO. 209, EAGLE MOUNTAIN PROJECT

Dear Mr. Mares,

The Notice of Preparation correctly indicates that paleontologic resources need to be addressed. An adequate program to mitigation impacts to nonrenewable paleontologic resources should include, but not necessarily be limited to, the following:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. The monitor should be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments which are likely to contain the remains of small fossil mammals. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens.
2. Preparation of recovered specimens to a point of identification, including washing of sediments to recover small vertebrates.
3. Identification and curation of specimens into a museum repository with retrievable storage.
4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency, signifies completion of the Plan to Mitigate Impacts to Paleontologic Resources.

Sincerely,

Allan D. Griesemer

Dr. Allan D. Griesemer
Museums Director

ADG:RER/jr

PD

RIVERSIDE COUNTY
COIS BYRD, SHERIFF

Sheriff

82-695 DR. CARREON BLVD. • INDIO, CA 92201 • (619) 342-8990

August 23, 1989

RECEIVED
AUG 28 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

Mr. David Mares
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside CA 92501

RE: Specific Plan No. 252,
Zone change No. 5499,
Comprehensive General Plan
Amendment No. 209/Eagle
Mountain Project

Dear Mr. Mares:

Regarding the above mentioned project we do not anticipate any significant impact on the Sheriff's Department's ability to provide police services. As the site is remote in its location, the area is not routinely patrolled. Response to called for services will normally result in a delay of 30-45 minutes driving time from the Indio area.

Regarding Project Design - Consideration toward site and equipment security should involve either fencing the area being utilized or maintaining private security personnel on premises or both.

We appreciate the opportunity to comment on the project from a law enforcement point of view.

Sincerely,

COIS BYRD, SHERIFF

Robert Doyle

Robert Doyle, Captain
Indio Station Commander

gt

Thank you for the opportunity to comment on the potential environmental impact which this project may have on the City of Whittier. Should you require further information, please contact me at (213) 945-8214.

Sincerely,

Neil K. Hudson
Director of Public Services

cc: Elvin Porter
Director of Planning

NKH:rt

CITY OF WHITTIER

13230 EAST PENN STREET, WHITTIER, CALIFORNIA 90602-1772 (213) 945

RECEIVED
SEP 01 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

August 28, 1989

Riverside County
Planning Department
4080 Lemon Street, 9th Floor
Riverside, California. 92581

Attention: Mr. David Mares, Planning Director

Subject: Notice of Preparation in re: Eagle Mountain Project

Dear Mr. Mares:

This is in response to your letter dated August 15, 1989, inviting comments regarding the Eagle Mountain Project. Essentially, that project entails the transportation of waste by rail from the Los Angeles metropolitan area to transfer stations to be situated at various locations in Southern California, presumably in the direction of the proposed Class III landfill which is to be sited in the vicinity of the Kaiser Eagle Mountain Iron Mine.

It is understood that the focus of your agency's environmental impact report is on the transportation of waste by rail along Southern Pacific lines. As you may be aware, a Southern Pacific railroad line runs through the southern portion of the City of Whittier.

Should that rail line be used to transport refuse to Eagle Mountain, the City would be interested in knowing what measures will be or have been considered to mitigate strewn trash, vector, and odor problems that could result in the event of a derailment or a mechanical failure which would immobilize the train within City limits.

LA HABRA
ALL AMERICA CITY

CITY of La Habra

CIVIC CENTER
P.O. BOX 337
201 E. LA HABRA BLVD.
LA HABRA, CALIFORNIA 90633-0337
(213) 905-9700
FAX (213) 905-9719

RECEIVED
AUG 31 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

August 29, 1989

Mr. David Mares
Project Planner
Riverside County Planning Department
4080 Lemon Street, 9th Floor
Riverside, California 92501

Re: Specific Plan No.252, Zone Change No. 5499, Comprehensive General Plan Amendment No. 209/Eagle Mountain Project.

Dear Mr. Mares,

The City of La Habra would not have any comments at this time regarding the preperation of an Environmental Impact Report for the subject project. We would appreciate receiving a Draft copy of the Environmental Impact Report for our review and comment.

If you should have any questions, please feel free to contact me at (213) 905-9724.

Sincerely,

Carlos Jaramillo
City Planner

W, PP, AQ, B, L

Laurence and Donna Charpied
P.O. Box 321
Desert Center, Ca. 92239
August 30, 1989

Re : Information to be included in the EIR/EIS

To Whom It May Concern,

Enclosed are many documents discussing the tailings ponds and water status at the defunct Kaiser Steel mine, in Eagle Mountain, California. We will number and briefly discuss the significance of each document enclosed.

1. Document dated September 20,1978 :
   This shows, although the water does not meet Federal Health Standards, the water could be treated and made potable.

2. Document dated December 9,1976 :
   After being inspected by the Water Quality Control Board, Kaiser receive a note stating they will get an order to be inspected by the Dam Safety Engineer before Pond No. 7 is approved. In the margin, Mr. Wick wrote, "We will ignore this." We feel this poses the question of Kaiser's credibility.

3. Document dated March 14, 1969 :
   This is an accounting for water loss in the pond. The amount of net water, not accounted for is 432 acre feet. Please note, evaporation was accounted for, implying 432 acre feet permeated into the ground strata. What conclusion would make for the 432 acre feet of water not accounted for ?

4. Document dated March 20, 1969 :
   This document from the Colorado River Basin Regional Water Quality Control Board shows the inconsistencies made by Kaiser's engineers in their water balance report for the existing tailings basin for the year 1968.

5. Document dated March 31, 1969 :
   This document refutes the letter from Mr. Swajan of March 20, 1969. It states a lining will be placed to assure minimum seepage. However, we believe, a project to dump 16,000 tons of garbage a day should be 100% contained, any seepage is environmentally unacceptable.

6. Document dated April 8, 1968 :
   This is a permeability study on the slime. The conclusion states,"It may be concluded from the test work to date that some percolation definitely does take place." Also, this report states the slime water is excessively high in sulfate-ions. It is ironic, MRC and Kaiser propose to use a hazardous cover to protect our precious water. What do you think the ramifications of this will be ?

7. Document dated June 12, 1969 :
   Discussed in this is seepage control. It is admitted, seepage is hard to detect. "In addition, the time lag between discharge or seepage and detection of degradation of ground water is great, and usually irreversible by the time degradation is detected."

8. Document dated July 12, 1968 :
   Pinto No. 2 water level. Since the ground level at well head equals 1,081 feet, the water table level therefore is very high, historically.

9.Document dated September 26, 1968 :
A report stating, "A 3 foot blanket of tailings at 25% moisture would control seepage rate not over 5.5 acre feet per year per acre, with a pond height of 80 feet." The height of the East Pit is 1,500 feet, many times higher than 80 feet. It has been estimated, 1% of the 16,000 tons of garbage is moisture. With the East Pit height, and moisture content considered, is it possible the seepage will be greater?

10.Document dated December 17, 1967 :
The Department of Water Resources outlines in detail, a review of Kaiser's report, "Fine Tailings Disposal, Water Recovery and Loss Report For a Six Month Period." There is a paragraph, "Direct subsurface observations" which should be carefully considered. MRC has already drilled about 4 wells to monitor infiltration. This section speaks of detailed information on the physical characteristics and location and extent of all pervious and impervious materials in the unsaturated zone. How did MRC determine where to put the monitoring wells ?

11.Document dated February 17, 1965 :
Date of pumpage in Pinto Basin by Kaiser. (1960-1965) Also attached is a graph of monthly pumpage and Depth to Water in feet below land surface, prepared by U.S. Geological Survey. It states, in 1958, the water level was approximately 155 feet below the surface. According to the Department of Water Resources Bulletin No. 118, September 1975, a map of the Colorado Desert Hydrological Study Area, page 84, shows the underground aquifers are all inter-connected. This means a possible contamination of 9.1 million acre feet of water. Also, The Riverside Hazardous Waste Management Plan Draft of March 21, 1988, page 85. "Facilities with subsurface storage or treatment shall not be sited where the historically highest ground water is 30 feet from the bottom of the waste containment structure." Does this, or similar criteria apply to solid waste disposal ?

12.Document dated June 18, 1964 :
This is a document of water analysis. The conclusion is the water does not meet U.S. Public Health Services drinking standards, however, it is not too bad and can be made suitable for drinking by proper dilution (or treatment). This is just further citing that water can be made potable. With the water crisis currently in this country, it behooves us to protect the available water from contamination.

This concludes the section on documents from Kaiser Steel. Now we will address the large map. This survey was done by a company in Tucson, Arizona in 1981, of the East Pit. It clearly states the water level to be 744 feet. The management of Kaiser Steel, namely, Jerry Fawcett and Orlo Anderson, contend the water, that was in the East Pit, was from wet tailings, and occurred after mining operations had ceased. We have several rebuttals to this statement :

1. In personal conversations with former Kaiser employees, we were told they had actually dug into the water table. They went on to say, the East Pit is still rich in ore, however, in trying to continue mining, efforts were counter-productive because their shovels would literally sink. We were told, as fast as Kaiser would pump water out, it would recover. One person who made these statements is Walt Hopkins, who still resides in Desert Center. James Capp, a former electrician with Kaiser, told us he worked on the pumps to get the water out. James Capp also resides in Desert Center.

2. It is rumored, Kaiser has signed a 30 year contract with a company who will extract precious metals from the tailings, using large volumes of water and chemicals. These are the same tailings planned to be used to cover the garbage. If what Jerry Fawcett and Orlo Anderson say about the water in the East Pit is true, isn't this making the same mistake twice ? Also, where would the contaminated water go ? And, what will the chemicals being used do to the air quality ? We have tried to find out the name of this company, but unsuccessfully. Perhaps you can obtain this information.

There are several letters enclosed, showing Kaiser Steel's blatant disregard for human safety and the environment. On July 6, 1989, there was a fire at Eagle Mountain. The thick black smoke travelled right over the East Pit, and made it's way to the MWD open aquaduct. Letters enclosed to Mr. Joe Asbury from the Riverside Environmental Health Office, and to Mr. Ed Pupka, Supervisor of the Hazardous Materials Unit, are accounting for the days following the fire. The records requested from the Health Department are enclosed. They clearly show PCB's and other hazardous material are being stored at Kaiser, beyond the 90 days allotted. It seems curious, Kaiser has done nothing with these items, until the fire occurred. What if there was no fire ? What were their plans for these items, before the Health Department inspected them and told them to comply with the hazardous disposal laws ? We are not satisfied with how the Health Department handled this. Other proof of PCB's in the July 6th fire, is an inter-office memo from MTC, dated 7/11/89. Also enclosed, is a letter written by Michael Uebersohn, a former Kaiser employee, stating the lack of safety standards by Kaiser Steel.

There is a question of Kaiser dumping household garbage into the East Pit before the landfill project has been approved. As part of the EIR/EIS, we request you excavate, to an appropriate depth, or do bore samples in the pit, to ascertain if garbage is in fact present. If there is buried garbage, will Kaiser Steel be instructed to remove, and properly dispose of it, at their expense ? If Kaiser is disregarding Health and Safety Standards now, how can we trust them to be involved with a landfill with a life expectancy of 100 years ? Please include Kaiser's credibility in the EIR/EIS.

We understand, MRC has a 99 year lease with Kaiser Steel, involving approximately 8,300 acres. There are three huge pits on this property, the East Pit, Central Pit, and the West Pit. MRC is talking only of using the East Pit. What plans are in the future for the other two pits ? Is there a possibility they will be used for chemical, toxic, or radioactive waste ?

Air quality must now be addressed. What would the breaking down of 16,000 tons of garbage a day do to the air ? Is it realistic to assume the methane capture system will deal with 100% of emissions ? Also, MRC proposes to have 200 trucks a day to be employed. How will the truck emissions, coupled with the decomposing garbage affect our air quality ? Also, a by-product of diesel fuel is formaldehyde, how would that affect the air ? When there are agricultural burns in the valley, sometimes the smoke lingers for several days. We are really interested in what your studies will conclude in regards to air quality.

Also, we would like a study on the bighorn sheep that inhabit Eagle Mountain. On June 22, 1989, two bighorn sheep were on my neighbor's Jojoba farm, drinking water and browsing on the bushes. We talked to several long time residents, who said the sheep never leave the mountain and come down into the valley. How will the landfill affect their habitat ? Will they leave the area?

Lastly, the EIR/EIS should do a report on the Jojoba plants, native to the area. In 1983, Congress included Jojoba in the Critical Agricultural Materials List. It is written in the Critical Agricultural Materials Report, "The committee recognizes that the development of a domestic industry or industries for production and manufacture from native agricultural crops, other than rubber, which are of strategic and industrial importance but for which the Nation is now dependent upon foreign sources would benefit the economy, the defense and the general well being of the Nation and additional efforts in this area should be undertaken or continued and expanded."

Furthermore, Jojoba is native only to the Sonoran Desert. If water becomes contaminated, what wouldthis do to the quality of this superior oil ? There are many acres under cultivation in the valley, and we think they warrant being included in the EIR/EIS. There are volumes dedicated to the analysis of Jojoba oil, from industrial applications to pharmaceuticals.

In closing, we think we covered everything we would like included in the EIR/EIS. It is very important to us, being land owners, that we know all angles of this proposal are covered. The elevation of our land is 760 feet, the elevation of the bottom of the East Pit is also 760. Is it fair to assume since we are approximately 4 miles downstream of the pit, that we would be the first to be contaminated, if there was groundwater intrusion ? If this proposal is permitted, we will have to accept and live with it, knowing an extremely prudent study on the environment was conducted. We also have the right to be informed, therefore, please send us a copy of the reports to keep us up to date. Thank you very much for your time and energy.

Sincerely,

Laurence R. Charpied Laurence R Cha

Donna J. Charpied Donna J. Charpied

Information about Kaiser Eagle Mountain, Inc. August 23, 1989

To Whom It May Concern,

1. The day after the fire in the building, at the mine on Eagle Mountain, (July 7, 1989), Riverside County Hazardous Materials Unit came to inspect alleged PCB leakage. They found some electrical capacitors on the floors of the building, which had been on fire the day before, that appeared to be leaking. They ordered Kaiser Eagle Mountain Inc. / Kaiser Steel Resources to remove and dispose of the capacitors, containing PCB's, and clean up of the area must be done.

   Jerry Stokes, agent for Kaiser, my boss at the time, and the person HAZMAT talked to, informed me that HAZMAT's order, "was no big deal." The procedure was, as told to me by my boss, outlined by HAZMAT, and had to be followed to the letter. Kaiser could not even start clean up until my boss got special materials, ordered by HAZMAT to do the clean up.

   I wasn't there when the clean up was done. But, after I did some checking, I found out that Jerry, in completing the ordered clean up, only removed the capacitors in the building.

2. Kaiser, some time ago, started renting to the general public. If you rented a house from Kaiser, you could have garbage pick up, once a week for only $8.00 a month. When our guys picked up the garbage every Monday from the houses Kaiser had rented and houses Kaiser employees lived in, the garbage was then dumped into the East Pit.

   It was the day after MRC's head guys were up at Eagle Mountain for a meeting and a tour, that the employees of Kaiser were told that no household garbage could be put into the East Pit. The reason we were told was the East Pit was not yet approved to be a landfill. We were told that anything else could be dumped into the East Pit, as long as it wasn't household garbage.

   On August 16, 1989, I was informed by a Kaiser employee, they now cannot dump anything into the East Pit. Kaiser is now taking everything to the Riverside County Landfill, down the road. It just seems "funny" that for months it was okay to dump into the East Pit, but now it is not.

3. Kaiser was planning to reopen the Pinto Well, due to the increase of population at Eagle Mountain. Kaiser wanted to make sure they had enough water to supply Eagle Mountain. A crew was sent out to the well, only to check on how much money and work it would take to get Pinto back on line. The crew that went out there found everything was ripped apart. Someone was trying to pull all the copper out of everything. Now one thing they did take, was the copper plates, out of three transformers, they had out at Pinto Well. It just so happened, these three transformers contained PCB's. Then Kaiser had two employees go out and drain most of the PCB's out of the transformers at Pinto. But not all, someone ended up breaking and smashing these transformers, to get the copper plates.

   Jerry Stokes knew, about a year now, some kind of clean up had to be don Yet, up until now, nothing has been done. Now I am hearing from different people that this just happened last week. But I **KNOW**, and believe that he is only saying that to cover up for what he should have done almost a year ago.

4. I started to work for Kaiser in May 1988. Right after I started, Jerry Stokes found out, somehow, that an inspector was coming to check on PCB's. So, for a good week, all of us employees of Kaiser spent our time washing down all the transformers. The idea behind this was, when the inspector

looks at them he can't see the PCB's leaking from them, which he couldn't because we just washed them away.

I just believe that these are just a few things that someone should look into. I guess what makes me think is, in the future, Kaiser plans some big projects for Eagle Mountain. But, right now they can't handle or comply with what they are to do, and there is nothing here. What are they going to do when there is something big here ?!?

Sincerely,
Michael J. Uebersohn

Michael J. Uebersohn

(619) ~~392-4333~~
(619) 227-5373 new #

Donna Charpied
P.O. Box 321
Desert Center, Ca.
92239
July 13, 1989

Supervisor Ed Pupka
Hazardous Materials Unit
9150 Flair Drive
El Monte, Ca. 91731

Dear Mr. Pupka,

I have had telephone communications with you and your office, (Mr. Mohan), regarding the fire at Kaiser Steel's defunct iron ore mine, located at Eagle Mountain, California.

To refresh your memory, the fire occured on July 6, 1989. It was not until July 7th that I learned there were transformers involved. I spoke to Mr. Jerry Stokes on the 7th about the incident. He said, "Do you want to know the truth ? There were 17 capacitors in the building that burned." He said, "There were no transform
I spoke with you on July 10th. You had Mr, Mohan inspect the area that morning. You informed me, Mr. Mohan's report did state there were transformers in the fire.

My husband was told by one of the volunteer firemen, that transformers were stor on one of the floors, partially lined with plastic in case any would leak. He went on to say the fire was so hot, they had to let it burn itself out.

On July 11th, I made an appointment to discuss This/ with Mr. Jerry Stokes and Mr. Crl Anderson. For reasons unkown to me, Mr. Anderson did not sit in on the session, ac he previously said, he was however, in the office complex. I asked Mr. Stokes abou the transformers. He said, "There are no transformers." I said , "Great ! What I would like from you is a copy of the permits from the hazardous waste unit who trar ported the transformers to an approved disposal site." Mr. Stokes said, "I refuse to show you that information, I am not required by law to do so." I said, "Jerry, please think carefully, and consider your answer, and I repeated my request." He said, "I don't have to show that to you unless the EPA or Jerry Fawcett instructs me to." I terminated our meeting.

Mr. Pupka, my husband works for the Return to Custody Facility, located at Eagl Mountain, for the past 16 months. He was a guard during the construction of the facility. He told me, when they were taking down the telephone poles, he saw abou 25 transformers, that Kaiser removed from the poles. I know by law, Kaiser had 90 days to dispose of them, or have the hazardous waste team come out and remove the PCB's inside. What Happened to them ?

I am formally requesting you to send me copies of the permits, proving Kaiser did in fact follow the hazardous waste disposal requirements. If there are no records of this, then where are the transformers ? Also, would you please send me a copy of Mr. Mohan's report of July 10th ? I have also written to Mr. Joe Asbury of the Riverside Environmental Health Office.

In closing, I would like to thank you and your co-workers for your time, information, and energy you have given to this matter. I await your reply.

Respectfully,

Donna Charpied

Donna Charpied

Donna Charpied
P.O. Box 321
Desert Center, Ca.
92239
July 13, 1989

Mr. Joe Asbury
Riverside Environmental Health Office
3111 E. Taquitz-McCallum
Palm Springs, Ca. 92262

Dear Mr. Asbury,

On July 6, 1989, there was a fire at Kaiser Steel's Eagle Mountain iron ore mine. It was not until the next day that I learned transformers burned in that fire. I called the hazardous waste management unit, in El Monte California, and was told there was no report of a possible contaminated fire. This was almost 24 hours after the fire.

My husband was told, by one of the volunteer firemen, that one of the floors of the burning building was a storage area for transformers removed from the defunct mine. He went on to say the room was partially line with plastic, in case the transformers would leak. Also, the fire was so hot, they had to let it burn itself out.

On July 7th, I telephoned the Kaiser office, and spoke to Mr. Jerry Stokes. He said there were no transformers involved. He said, "If you want to know the truth, there were only 17 capacitors stored in the room." We then went to MWD and spoke with Mr. Tex Moody, who said this was not reported to them. The black smoke from this fire went right over MWD's open water canals.

On July 10th, I telephoned the hazardous waste management unit, and spoke to Mr. Ed Pupka. His office had gone to the area to inspect the incident that morning. The report was some transformers were in fact in the fire.

On July 11th, I made an appointment to discuss this with Mr. Jerry Stokes and Mr Orlo Anderson. For reasons unknown to me, Mr. Anderson did not sit in on the sessi however, he was in the office complex. I asked Mr. Stokes about the transformers. He said, "There are no transformers." I said "Great ! What I would like from you is a copy of the permits from the hazardous waste unit who transported the transformers from your facility to an approved disposal site." Mr. Stokes said, "I refuse to show you that information, I am not required by law to do so." I said, "Jerry, please think carefully, and consider your answer, and I repeated my request He said "I don't have to show that to you unless the EPA or Jerry Fawcett instructs me to". I terminated our meeting.

Mr. Pupka informed me, a private citizen may see this paper work due to the

Public Records Request Act. Kaiser Steel minimized the problem of this fire. By not showing me the records I have requested makes me think there is something they are hiding. If in fact they did deal with the tarnsformers properly, simply showing me the paper work, would have appeased me.

My husband has been working for the Return to Custody Facility, located at Eagle Mountain, for the last 16 months. He was a guard during the construction of the facility. He told me, when they were taking down the telephone poles, he saw about 25 transformers, that were removed from the poles. I know by law, Kaiser had 90 days to dispose of them, or have the hazardous waste team come out and remove the PCB's inside.

I am formally requesting you send me copies of the permits, proving Kaiser did in fact follow the hazardous waste disposal requirements. If there are no records of this, then where are the transformers ?

I thank you for your time and energy, and I will be awaiting your reply.

Respectfully,
Donna Charpied
Donna Charpied

MTC

MANAGEMENT & TRAINING CORPORATION
Eagle Mountain RIC Facility

INTEROFFICE MEMORANDUM

Memo To: FRANK BLAKE

Copies To:

Subject:

Date: 7/11/89

From: JIM NELSON
MAINTENANCE

Jim Nelson

ON THE AFTERNOON OF THURSDAY JULY 6 AT APPROXIMATELY 4:30 PM INMATE _____ _ __ CDC# RESPONDED TO THE URGENT AND IMMEDIATE NEED FOR TRAINED FIRE CONTROL PERSONEL. A FIRE HAD BROKEN OUT IN THE KAISER BENE PLANT WHEN A CUTTING TORCH IGNITED RUBBER LINERS AS THIS FIRE INVOLVED TRANSFORMERS FILLED WITH PCB. THE DANGER WAS INCREASED OVER AND ABOVE THE FIRE ALONE. THE EMERGENCY PASSED AT APPROXIMATELY 8:00 PM WHEN THE FIRE WAS EXTINGUISHED.

jn/mj

7/21/89 Another fire in same Kaiser Bldg. @ approx. 6:47 A.M. Lake Tamarisk Fire + Rescue was called and they responded.

KaiserSteel
Resources

Post Office
Desert Center, Calif.
(619) 392-4257
(619) 392-4341 Telecopier

July 20, 1989

Mr. Joseph L. Asbury
Hazardous Materials Specialist
Environmental Health Division
Department of Health
3111 E. Tahquitz-McCallum Way
Palm Springs, CA. 92262

Dear Mr. Asbury:

As per our telephone conversation July 20, 1989, please find enclosed PCB compliance records.

1. Quarterly inspection of PCB equipment over 500 ppm.
2. Monthly inspections of the storage area - shipped out 02/10/88.
3. List of PCB equipment and level of contamination.
4. PCB spill at fines crusher & correspondence between Kaiser & Park Corporation. My letter dated 11/10/87 may explain the use of glue.
5. Shipment manifest.
6. PCB equipment shipped out 02/10/88, note that it also includes the transformer from the fines crusher spill. NOTE: These transformers were shipped to Clive, Utah also including 9 drums of solids. The oil & capacitors were shipped to Coffeeville, Kansas. Copies of these will follow.
7. The items placed in storage at present time for disposal.
8. Inspection of present storage area.
9. Transformer Nos. 2,3, and 6 were removed from the poles and the RTC facility, and placed in storage and then sampled.

Photos are also enclosed of the clean up of the PCB spill, as a result of the fire 07/06/89.

Sincerely yours,

Jerry W. Stokes

Jerry W. Stokes
Facility Manager

JWS/klv

Enclosures

KAISER
STEEL

MEMO TO: G. A. Fawcett

DATE July 17, 1989

7

COPIES TO:

FROM: J. W. Stokes Jerry W. Stokes

AT: KEM

SUBJECT: PCB Compliance Update

The following items have been placed in storage for disposal - 23 barrels (content described below), and nine transformers:

BARRELS

#1. PCB oil pumped from SR# 64SJ602 Pinto well sub. (361 p.p.m.), placed in storage, January 1989.

#2. PCB oil pumped from SR# 64SJ602 Pinto well sub. (372 p.p.m.), placed in storage, January 1989.

#3. PCB oil pumped from SR# 6341375 Heavy media sub. (249 p.p.m.), placed in storage, January 1989.

#4. PCB oil pumped from SR# 6341375 Heavy media sub. (249 p.p.m.), placed in storage, January 1989.

#5. PCB oil pumped from SR# 64SJ601 Pinto well sub. (452 p.p.m.) and SR# 7372058 Bene blending sub. (-1 p.p.m.), placed in storage, January 1989.

#8. PCB oil pumped from SR# 6948743 Bene thickener sub. (513 p.p.m.), placed in storage, January 1989.

#9. PCB oil pumped from SR# 6948743 Bene thickener sub. (513 p.p.m.), placed in storage, January 1989.

#11. Contains (6) Six Westinghouse Interteen Capacitors, Removed from Met. Lab control room.
SR# 62K3223 62K3271 63E4456 62K3231
6261806 63E4456, placed in storage, February 1989.

#12-14. Park Corporation - contains contaminated soil from spill at fines crusher SR# E-694758, Placed

#15. PCB oil pumped from SR# 64SJ600 Pinto well sub. (361 p.p.m.), placed in storage, January 1989.

#16. (15 gal) PCB oil pumped from SR# 64SJ602 Pinto well sub. (372 p.p.m.), placed in storage, January 1989.

#17. PCB oil pumped from SR# 64SJ601 Pinto well sub. (452 p.p.m.), placed in storage, January 1989.

#18-23. Contains oil saturated soil from unused motor oil spill, placed in storage, January 1989.

TRANSFORMERS

1. Westinghouse SR# 1060342 167 K.V.A.
   size - 36"W X 29" X 62"H
   165 gal oil X 12.5 = 2,062.5 lbs. oil
   2300 / 460 / 220 / 115 (16 p.p.m. / PCB)
   Removed from service April 1989.

2. Westinghouse SR# 1061046 167 K.V.A.
   size - 36"W X 29" X 62"H
   165 gal oil X 12.5 = 2,062.5 lbs. oil
   2300 / 460 / 220 / 115 (47 p.p.m. / PCB)
   Removed from service April 1989.

3. Westinghouse SR# 1061047 167 K.V.A.
   size - 36"W X 29" X 62"H
   165 gal oil X 12.5 = 2,062.5 lbs. oil
   2300 / 460 / 220 / 115 sample taken 05/24/89
   Removed from service April 1989. 06/23/89 5.8 ppm PCB.

4. General Electric SR# B450387 50 K.V.A.
   size - 21" X 46"
   Total Wt. 970 lbs. Est. 45 gal oil
   4160 / 7200y / 120 / 240 placed in storage & sampled 05/24/89
   06/23/89 222 ppm PCB.

5. Allis Chalmers SR# 2537894 25 K.V.A.
   size - 26"W X 35"H
   16.5 gal oil = 206.25 lbs. oil
   4160-7200y / 120 / 240 placed in storage & sampled 05/24/89.
   06/23/89 25 ppm PCB.

6. Westinghouse SR# 60SF116 15 K.V.A.
size - 17" X 40"
Est. 25 gal oil
4160 / 480 / 115 placed in storage & sampled 05/24/89.
06/23/89 28 ppm PCB.

7. Westinghouse SR# 7025243 1000 K.V.A.
size - 78 X 68 X 71
261 gal oil X 12.5 = 3262.5 lbs. oil Pure 65%
Date tested - 06/11/86.

8. Westinghouse SR# 7025244 1000 K.V.A.
size - 78 X 68 X 71
261 gal oil X 12.5 = 3262.5 lbs. oil Pure 68%
Date tested - 06/11/86

9. Westinghouse SR# 7025245 1000 K.V.A.
size - 78 X 68 X 71
261 gal oil X 12.5 = 3262.5 lbs. oil Pure 60%
Date tested - 06/11/86

10. Contains 5 Capacitors
16 lbs. of dry soak.

11. Contains 4 Capacitors
16 lbs. of dry soak
Clean up materials

JWS/klv

KAISER
STEEL

MEMO TO J. D. Saussaman

DATE September 20, 1978

COPIES TO J. T. Taylor
D. E. Wick
File ✓
bcc - J. E. Good

FROM: J. O. Englund

AT: Eagle Mountain

SUBJECT: Consulting Services; Fluoride Removal
Eagle Mountain Domestic Water Supply

Reference:

The Eagle Mountain supply of potable water which comes from the Pinto Basin averages 2.4 - 2.6 parts per million in fluorine. Federal health standards which have been adopted by the state set a limit of 1.0 - 1.4 parts per million depending on the average ambient temperature.

In addition to the standards, California has recently put into effect, new regulations defining what is classified as a public water service. According to J. E. Good, Eagle Mountain would in all probability be defined as a public water supply inasmuch as at least five hook-ups are to the general public - i.e., the schools, cafe, stores, bank, etc. It is only a matter of time then before Eagle Mountain would have to either put in a defluorination plant or develop an alternative means.

The attached SER presented for your review covers the services of Mr. Frederick Rubel, Jr., a consulting engineer who specializes in defluorination plants. Mr. Rubel designed the Lake Tamarisk plant and several others around the country.

This SER would only cover one research visit, a water analysis and bench study to validate fluoride removal characteristics and a preliminary estimate of equipment necessary and operating cost projections.

The water from the Chuckwalla Basin runs on the order of 6-7 parts of fluorine per million and would require more extensive treatment to meet requirements.

Alternatives to building a treatment will depend upon the construction and operating cost of such a facility. One suggestion is to furnish bottle water to all homes.

Your approval is requested so that we might become prepared for any eventualities.

JOE:jj

KAISER
STEEL

SPECIAL EXPENDITURE REQUEST

Requestor: J. O. Englund	Department: Raw Materials - EMM	Date: September 8, 1978

Details & Purpose of Expenditure:

Consulting services for the removal of excess flouride from the domestic water supply at Eagle Mountain. Details in attached letter.

Estimated Costs & Duration (show costs in detail and total by months):

October 1978	$1,000.
November 1978	1,500.
TOTAL COST	$2,500.

For Use When Requesting Consulting Services:

Name & address of consultant

Frederick Rubel, Jr., P.E.
Rubel and Hager, Inc.
Consulting Engineers
4400 E. Broadway, Suite 710
Tucson, Arizona 85711

Expenses to be reimbursed & payment terms Payment to be made on monthly invoices.

APPROVALS: John O Englund 9/20/78
Department Head

Division Head

President or Vice President, Administration

nstructions:

1. Use this form to secure approval for special expenditures chargeable to administrative, selling and general expense categories. Examples are consulting services, sales meetings and special conferences, golf tournament, mine development and exploration projects, management training programs, etc.
2. Submit original to General Accounting and retain one copy. (General Accounting will make additional distributions as appropriate). When requesting consulting services, submit a copy to Purchasing (ref. Policy Statement 104.03).
3. General Accounting will initiate budget revisions upon receipt of this form properly prepared.

Rubel and Hager, Inc.

September 5, 1978

Mr. W. W. Miller, Purchasing Agent
Kaiser Steel Corporation
Eagle Mountain Iron Ore Mine
P. O. Box 158
Eagle Mountain, CA 92241

RE: Quotation No. 79-34600

Dear Mr. Miller:

Thank you for the opportunity to offer our consulting services for the removal of excess fluorides from your water supply. Enclosed for your files is a copy of the latest ALCOA NEWSLETTER which features our fluoride removal water treatment plants. We are working on other plants which are in various stages of design. I have spoken in detail with Mr. Dave Wick regarding the method in which we recommend your implementation of our services on this project. He requested that I confirm this to you in writing with a copy for him.

The first step is to perform a preliminary technical and economic feasibility evaluation for you. This effort includes the following:

1) One visit to the project site to obtain water samples for analysis and fluoride removal validation. Obtain data covering site information, soil analyses, well driller's log, historical data on water quality and consumption, climatological data and project design criteria.

2) Perform bench study to validate fluoride removal characteristic of water sample.

3) Perform chemical analysis of water sample.

4) Prepare report providing technical evaluation with preliminary installed equipment and operating cost projections.

This preliminary evaluation shall be completed within four (4) weeks of receipt of written authorization to proceed. Fee for these services shall be two thousand dollars ($2,000.00).

Consulting Engineers
4400 E Broadway Suite 710
Tucson, Arizona 85711
Telephone 602 327-5515

RE: Quotation No. 79-34600

Upon completion of this study, you will have sufficient information from which you may plan and fund the operational plant. Services which we render for implementation of operational projects include the following:

1) Provide all reports, plans, and specifications required for approval of governmental authorities to construct a treatment plant for removal of excess fluoride from your water supply.

2) Assist in the preparation of proposal forms, notice to bidders and contract documents.

3) Assist in the evaluation of bids, negotiations and preparations of equipment and construction contracts.

4) Perform supervision of on site construction and installation as well as equipment manufacture.

5) Prepare operating and maintenance instruction manual.

6) Train plant operators.

7) Startup treatment operation.

8) Obtain approval of water supply for public usage by governmental authorities.

We furnish close surveillance of all phases of manufacture, installation operation, and maintenance to assure our clients of a quality finished project. Method of compensation for the desired scope of services is flexible and will be adapted to your normal mode of operation.

If you desire to visit our operating fluoride removal plants, please advise and arrangements will be made. We would appreciate the opportunity to serve you on your forthcoming project. We look forward to hearing from you in the very near future.

Very truly yours,

RUBEL AND HAGER, INC.

Frederick Rubel, Jr., P.E.

FR/jao
Enc.

KAISER STEEL

RECEIVED
DEC 10 1976
M. J. HUGHES

MEMO TO: M. J. Hughes

COPIES TO: J. O. Englund
L. J. Norby
J. F. VanDeBeuken

DATE: December 9, 1976

DE Wick

FROM: D. E. Wick

AT: Eagle Mountain Mine

SUBJECT: Inspection by Water Quality Control Board

Today Harry Hanson, Water Quality Control Engineer for the State of California, made an inspection of our facilities.

The tailing ponds were not leaking but the free water quantity in ponds No. 5 and 6 was excessive. A survey made of pond No. 5 on November 22 indicated in excess of 50 acre feet of free water. Only 15 acre feet is allowed by law. Today the return water pump was operating from No. 5 but off on No. 6 pond.

We will ignore this. DEW

In a hand-written note given me by Harry Hanson was the name and address of the Chief Engineer in Sacramento, Department of Safety of Dams. He said we should send a copy of our proposed construction plans for pond No. 7 to this engineer. He said the note was not an order, but that eventually, we will get an order and will be inspected by the Dam Safety Engineer before pond No. 7 is approved.

Harry was pleased to see earthwork in progress by the railroad bridge to reinstall the drainage pipeline.

DEW/fn

WW-12

COPY

March 14, 1969

Mr. Arthur Swajian, Executive Officer
Regional Water Quality Control Board
P. O. Drawer 1
Indio, California

Dear Mr. Swajian:

In accordance with Resolution No. 67-2, we have the following information for the year 1968. In arriving at a water balance several corrections were made on the previous information that you had received.

Dry Tons Solids to Pond	Volume of Solids to Pond in Acre Feet	Acre Feet of Water to Pond	Acre Feet of Water Returned	Gain in Pond Volume in Acre Feet	Evaporation in Acre Feet	Net Unaccounted Acre Feet
1,371,757	315	2009	423	1120	349	432

Yours very truly,

KAISER STEEL CORPORATION

H. S. Scott

H. S. Scott
Chief Engineer

HSS/ve
cc: M. J. Hughes
H. M. Conger
J. E. Good

STATE OF CALIFORNIA RONALD REAGAN, Governor

COLORADO RIVER BASIN REGIONAL WATER QUALITY CONTROL BOARD
82-380 MILES AVENUE
P.O. DRAWER 1
INDIO 92201
Jack J. Fleming
E. F. BEVENS, Chairman
KEITH AINSWORTH, Vice-Chairman
LEONARD McCLINTOCK
[redacted]
HAROLD A. WORKMAN
[redacted]
DON R. WORK
Lee J. Escher
ARTHUR SWAJIAN
Executive Officer

March 20, 1969

Kaiser Steel Corporation
H.W. Conger, Assistant Manager
Eagle Mountain Iron Ore Mine
P.O. Box 158
Eagle Mountain, California

SUBJECT: Water Balance Report for Existing Tailings Basin for the year 1968.

We have made comparisons between the information contained in the subject report and the assumptions made in your engineering report for tailings basin No. 5. These comparisons indicate the following:

1. Infiltration
   The net unaccounted for water for 1968 was 432 acre feet. The tailings basin had an average area of 38.4 acres. Therefore, the amount infiltrating into the strata below the basin could be as high as 11.3' per year. Your report prepared for tailings basin No. 5 estimates a maximum infiltration of 5.5' per year.

2. Water reused from pond
   Your 1968 water balance reports that approximately 21 percent of the water discharged to the basin was reused. Your estimate for tailings basin No. 5 is 45 percent reuse.

3. Evaporation
   Your estimate of the evaporation rate from the existing basin was 9.1 feet for 1968. The state climatologist reports this amount as measured from standard pans in the Coachella Valley-Salton Sea Area. A pan factor should be applied to this figure to convert to bodies of water. Therefore, it seems likely your pond's actual evaporation rate would be less than the 9.1' used in the water balance; and the infiltration would accordingly be even higher than reported.

Based upon the above, it would appear that several assumptions made in your engineering report for tailings basin No. 5 may not be realistic. The most important of these are:

1. Unless the amount of water reused can be increased to the estimated 45 percent, tailings basin No. 5 will be required to retain more water than indicated in your report.

2. If the infiltration from the new basin No. 5 is as high as that from the existing basin, then the waste water will infiltrate to ground water. Your consultant reported that laboratory tests indicate that the caliche underlying the basins would absorb 0.075 cubic feet of water for each cubic foot of caliche. Their estimate was that 5.5 feet of water would infiltrate each year, or a total of about 17 feet in three years. Based on these figures, they calculate 226' of caliche would absorb all the infiltration. Because over 300 feet of caliche exists between the bottom of the basins and the water table, it was their conclusions that the infiltration would not reach the water table.

   However, upon the basis of your 1968 water balance of 11.1 feet infiltrating, the wastewater would surely reach the water table.

In view of the above, we request that Kaiser Steel Corporation submit a supplement to their report of proposed waste discharge dated July 1, 1968 (prepared by Hawke Engineers). Said supplement should explain in further detail the facilities and procedures which will be used to limit the infiltration rate to not exceeding the 5.5 acre-feet of water-per-year per acre of pond area as set forth in said report. In addition, we desire information on your procedures for inspecting and testing the imperviousness of the lining being constructed in tailings basin No. 5.

COLORADO RIVER BASIN REGIONAL
WATER QUALITY CONTROL BOARD

Arthur Swajian
ARTHUR SWAJIAN, Executive Officer

WCP/jb

-1/-12

COPY

March 31, 1969

Arthur Swajian
P. O. Drawer 1
Indio, California 92201

Dear Mr. Swajian:

I am writing you in answer to your letter of March 20, 1969.

In your letter you question several points which would directly affect the reliability of our program as accepted by the Water Quality Control Board in Resolution 68-19.

First, we have every confidence in our evaporation rate as we are now reporting it. In February of 1968 we installed a Class "A" type evaporation pan in accordance with U. S. Weather Bureau recommendations. We visited the U.S.G.S. station at the Salton Sea and observed their procedures in measuring and calculating evaporation rates. The evaporation rates that we have reported to your office have had a 0.7 factor applied to them. The only explanation I could offer you for our evaporation rate being higher than rates you are familiar with is that our tailings basins are located immediately adjacent to the Eagle Mountains and the water level of these ponds is elevated above the surrounding ground surface. As a result of these two factors, there is continual air movement across the surface of these ponds. In any event, these evaporation rates are reported to you as actually measured with the 0.7 factor applied.

Secondly, the methods we have had to use to determine the amounts of water and solids going into the basins leave a great deal to be desired. As I explained to you on the afternoon of August 2, 1968 when Mr. Jim Hawke and I visited your office, we had no accurate method of determining the amount of material that was being discharged from our plants and were having to estimate it. You may recall that we operate two separate plants, both of which generate slime tails. Since we only accurately weigh the saleable product coming from each of the plants, we have had no good handle on how much of the remaining material was coarse tails and how much was slime tails. After my meeting with you in August I realised that we must design and install a monitoring system for our slime tails that could provide us with reliable data with which to calculate our water balance. A sketch of this system is attached with a listing of the equipment purchased for installation. Similar systems will be placed in both plant slime tailing systems and will be operable before we activate the new #5 pond. These systems, with the required piping changes, will represent to Kaiser Steel an investment of over $30,000.00.

COPY

At the same time we were designing the monitoring system we undertook to improve the existing method of estimating the material going to the slime basin. A closer approximation of the amount of material discharge was achieved during the period of September through December by having personnel frequently take density samples of both slime systems and by constantly estimating the flow rates from the several points of discharge. The more frequent measurements showed that both the flow rate and densities changed frequently and that an accurage determination can only come from continuous measuring (which is what our new system will do). In any event, as you probably noticed, the water for which we could not account during the period of January through August, 1968, was at a 12.4 acre-foot annual rate and that during the period September through December, the annual rate was 8.4 acre-feet. The loss rate during this latter period by month was as follows:

September	4.9 Acre-feet (annual rate)
October	8.1 Acre-feet (annual rate)
November	14.4 Acre-feet (annual rate)
December	6.4 Acre-feet (annual rate)

It does not seem logical to me that the annual seepage rate for a given area could nearly double during a months time or be reduced by nearly 2 1/2 times in a month when the static head changed by only 2.5%. What this does show is that the actual amount of solids and water going into the basin is not yet being accurately reported and that until a reliable system of recording this material is installed, accurate measurement will be impossible.

In our judgement, nothing has transpired since August that would refute the facts that were presented to your office at that time. I have asked Mr. Hawke to submit to you under separate cover a statement reaffirming the conclusion of his earlier laboratory test work. I also asked him to enclose the results of his test work regarding the condition of the lining we are presently placing in the new #5 tailing basin in accordance with Resolution 68-19.

It may be of some interest that the lining that is now being placed in #5 pond to assure a minimum of seepage will cost Kaiser Steel Corporation in excess of $300,000.00.

We expect to complete the construction of #5 pond by May of this year and need to activate it at that time. Before we start discharging slime tailings into it we will ask Hawke Engineers to send you a report on the placement of the lining in the basin.

In closing, I feel that our determination of the evaporation rate for our tailing basin is correct and that while our estimate of the amount of material going into the basin deserves some criticism, we have taken positive and costly steps to more accurately determine this quantity. This will be reflected when we activate the #5 pond.

Very truly yours,

H. M. Conger
Assistant Manager
Eagle Mountain Mine

HMC/ve
cc: M. J. Hughes
J. Hawke
J.O. Englund

GDL-981

April 8, 1968

D. E. Wick
Superintendent
Engineering Services
Eagle Mountain Mine

R. G. Moore ✓
M. J. Hughes
H. M. Seager
R. C. Forbes

JCE
C. Englund
Chief Metallurgist

Eagle Mountain

COPY

Permeability Testwork

The attached report covers the laboratory testwork done to date on permeability.

Kaiser Steel Corporation
Eagle Mountain Mine

COPY

Tailings Basin
Permeability Testwork

By: S. K. Khaderi
J. O. Englund

April 8, 1968

COPY

TAILING BASIN
PERMEABILITY TESTS

I OBJECT: The object of this test was to determine what, if any, percolation would occur of water from the slime tailings pond into the ground strata and to measure sulfate ion content.

II Introduction

The Colorado River Basin Regional Water Quality Control Board has recently begun to pay closer attention to Kaiser Steel Corporation and the disposition of slime tailings at the Eagle Mountain Mine. It is the contention of the Board that slime tailings water is excessively high in sulfate-ion and that seepage of this water into the ground strata is contaminating the sub-surface.

As part of a board resolution (67-2; superceded by 68-1) they require some test work to determine the extent of percolation - this test work to be conducted according to procedure established by a California State registered civil engineer. As a result of the original resolution 67-2 Mr. Phil Abrams, a consulting engineer with offices in Palm Springs and Beverly Hills, prepared an initial test program, a copy of which is attached.

III Summary

The permeability or percolation tests described by Mr. Abrams were conducted in the Eagle Mountain Mine Laboratory essentially as recommended.

A 10" diameter by 5' high percolation tube was set up in the laboratory for testing under both atmospheric pressure and a hydrostatic head of 48 psi which would simulate a 60' depth of tailings.

The results indicate that under atmospheric pressure and a 1' depth of slimes that percolation varied from an initial 17,054 to 4,185 gal/acre/day at the end of 19 days. Applying hydrostatic pressure to the same bed of slimes resulted in a sharp increase to 114,669 initially which tapered to 40,805 gal/acre/day after 8 days.

Increasing the depth of slimes to 2', and applying the 48 psi pressure resulted in a rate which varied from 33,689 gal/acre/day initially to 17,996 after 16 days.

A fourth test using a 4" diameter pipe with an increased height was set up, however, the results are questionable. This phase of the test will be repeated with a larger diameter pipe.

The sulfate-ion contents of the various filtrates were checked and found to be in a range corresponding to the usual assays - that is 2100 to 2700 ppm.

COPY

IV Procedure

A. Material Tested:

A composite sample of slime tailings from the North Wilfley pump to no. 4 tailings pond.

B. General Test Setup:

The experimental setup consisted of a 10" diameter x 5' high pipe to which was fitted the drain base plate of a standard 10" Denver Equipment Co. laboratory filter. This base is designed to collect filterate over the entire area of the pipe and discharge it through a 1" hole. A polyethylene filter cloth was placed over the base to prevent loss of solids.

A pressure cap with a pressure gauge and an inlet for water was fitted to the top of the pipe for pressure testing. A constant flow of tap water into the pipe maintained a hydrostatic pressure of 48 psi. In all cases the filterate was collected in a flask and saved.

A similar set up was made for the 4" diameter x 16' high pipe with the exception of a pressure cap. No hydrostatic tests were made on this pipe. The outlet for filtrate consisted of a 4" hole in the bottom of the pipe. Again a polyethylene filter cloth was placed in the end of pipe to prevent the loss of sand and tailings.

Batch rinsing was done in a 10" standard Denver Equipment Co. laboratory filter.

COPY

C. Test No. 1.

Pipe dimension: 10" diameter by 5' high.
Sample height: 3.06" approximately.
Desert sand: 1' approximately.
Pressure: Atmospheric.

Approximately 1' of desert sand taken from the proposed tailings area was put into the bottom of the pipe. Over this, approximately 3.06' of fine tailings slurry were poured. The pipe was covered to keep evaporation to a minimum but vented to maintain atmospheric pressure.

Volume of filtrate was measured every 24 hours for 19 days. At the end of the test period the accumulated volume of filtrate was determined and a graph (Figure No. 1) was plotted, filtrate volume versus time.

D. Test No. 2.

Pipe dimension: 10" diameter x 5' high.
Sample height: 1' of compacted slimes from Test No. 1.
Desert sand: 1' approximately
Pressure: Hydrostatic 48 psi.

COPY

This test was conducted on the sample from Test No. 1, but under hydrostatic pressure of 48 psi to simulate a 60' depth of tailings.

Volume of filtrate was recorded every 24 hours for a period of 8 days. The volume of filtrate was measured periodically. Sulfate ion content of the filtrate was also determined. A graph (Figure No. 2) was plotted of filtrate volume versus time.

E. Test No. 3.

Pipe dimension: 18" diameter x 5' high.

Sample height: 2.88' of slurry over 1' of compacted slimes.

Desert sand: 1' approximately.

Pressure: Hydrostatic 48 psi.

The pipe was filled approximately 1 1/2' below the brim with the sample of slime tailings. Hydrostatic pressure of 48 psi was maintained for the test period. This step was adopted to determine the percolation rate with a greater depth of solids.

F. Test No. 4.

Pipe dimension: 4" diameter x 16' high.

Sample height: 14.83' (full) of slurry

Desert sand: 1'

Pressure: Atmospheric

The pipe was filled with slime tailings approximately 1/2" below the brim. Atmospheric pressure was maintained for the test. Volume of filtrate was recorded every 48 hours for a period of 35 days. A sulfate ion analysis was also made. Figure No. 3 shows a graph of filtrate volume against time.

G. Test No. 5.

Batch rinsing on a sample of slime tailings was done in a Denver laboratory filter.

Batches of 1000 cc to 5000 cc of distilled water were filtered through the sample. The individual sulfate ion content in each filtrate was determined.

V Results and Discussion

Figure No. 1 to 4 show the percolation curves resulting from each of the tests. Although the actual rate of percolation varied with the test conditions the curves exhibit the same general shape - an initial high rate which breaks after 6 to 8 days and falls off to a lower rate. The break in all probability is due to compression of the slimes as they settle out.

The sulfate ion content of the filtrate in each case remained in the range normally experienced with the tailings water.

COPY

Test No. 1 (Figure No. 1)

The rate of percolation over the test period averaged 10,677 gallons/acre/day. Initially the rate was equivalent to 17,054 gallons/acre/day which fell to 4,185 gallons/acre/day by the 19th day. This was at atmospheric pressure and through a one foot bed of tailings.

Test No. 2 (Figure No. 2)

The initial rate was 114,669 gallons/acre/day which fell to 40,804 gallons/acre/day by the end of the 8th day. The overall average for the period was 51,633 gallons/acre/day.

During the test period the hydrostatic pressure was maintained as closely as possible to 48 psi which is the equivalent of 60' of tailings at 60' of depth and 60% solids.

Test No. 3 (Figure No. 3)

This test was similar to No. 2 with the exception that the bed of slurry was increased to approximately 2 feet to determine what effect, if any, the depth of bed would have on permeability. The initial rate was 33,689 gallons/acre/day which dropped to 17,996 gallons/acre/day after 16 days. The average was 28,550 gallons/acre/day for the test period. In

In comparing this test with test No. 2 there is a drop of 44.7% in average percolation rates.

Test No. 4. (Figure No. 4)

Test No. 4 was intended to show the effect of a greater depth of slimes on percolation under atmospheric conditions. For convenience a 4" pipe was used rather than a 10" diameter as in Test No. 1. In comparing the results to the latter there was an increase in the rate with greater depth. Possibly there is a wall effect from the smaller diameter pipe which would result in an apparent higher filtration rate.

COPY

Test No. 5.

Test No. 5 outlines the effect of batch rinsing a sample of slurry. Repeated rinsing will remove the sulfate ion. However, even when the sulfate in the filtrate was down to a minimum the remaining filter cake assayed 1.54% sulfur, indicating that not all the sulfur is soluble.

VI Conclusions and Recommendations

It may be concluded from the test work to-date that some percolation definitely does take place. The rate will be initially high when the pond is new and shallow. As material is added and compression sets in the rate falls off. Obviously percolation will cease at some time, however, from the foregoing test work it would be difficult to estimate when that point will be reached.

Experience tells us that this type of tailing has a tenacity for holding moisture and that years after any pond ceases to receive additional slurry the moisture in depth will remain at 30-40%.

Additional test work should be carried out to try and delineate a sharper more accurate time factor.

TABLE NO. 1.

Percolation Rates

Test No.	Test Period Days	Total Filtrate Gals.	Gallons/Acre/Day Initial	Gallons/Acre/Day Final	Gallons/Acre/Day Average
1	19	2.96	17,054 (11.8)	4,185 (2.9)	10,677 (7.4)
2	8	5.22	114,669 (79.6)	40,805 (28.3)	51,633 (35.6)
3	16	5.77	33,689 (23.4)	17,996 (12.5)	28,550 (19.8)
4	36	1.87	49,607 (34.4)	11,906 (8.3)	17,680 (12.2)

( ) = gpm/acre/day

TABLE NO. 2

Test No.	Sulfate-Ion Content
1	2444
2	2756
3	2606
4	2162

TABLE NO. 3

Test No.	Distilled Wash Water-cc	Sulfate Ion
1	Original	2416
2	1000	1027
3	2000	362
4	3000	47
5	4000	15
6	5000	8

COPY

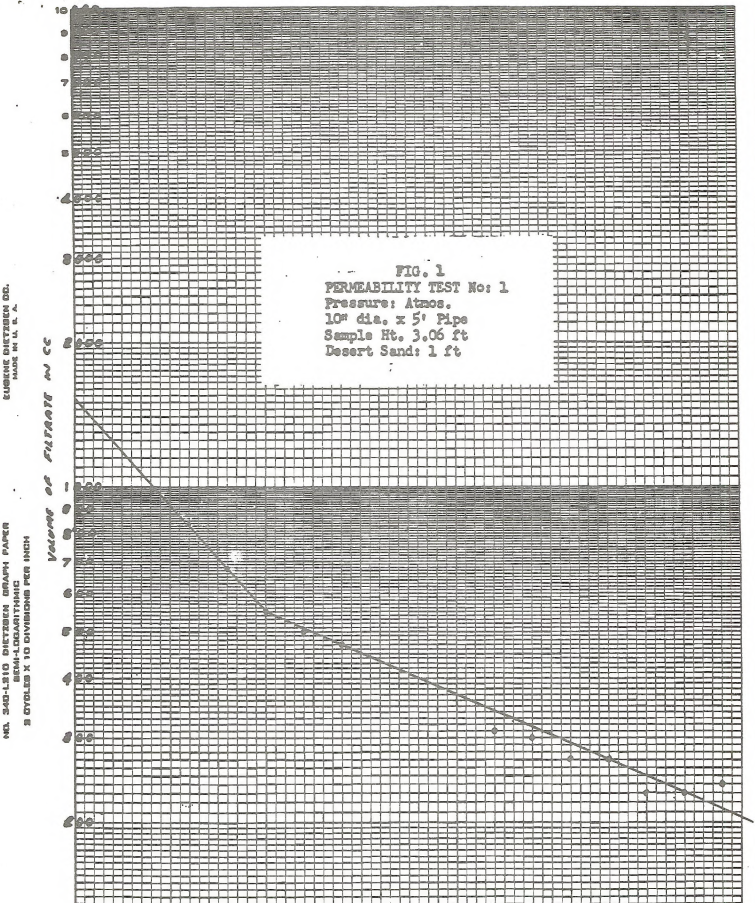


FIG. 1
PERMEABILITY TEST No: 1
Pressure: Atmos.
10" dia. x 5' Pipe
Sample Ht. 3.06 ft
Desert Sand: 1 ft

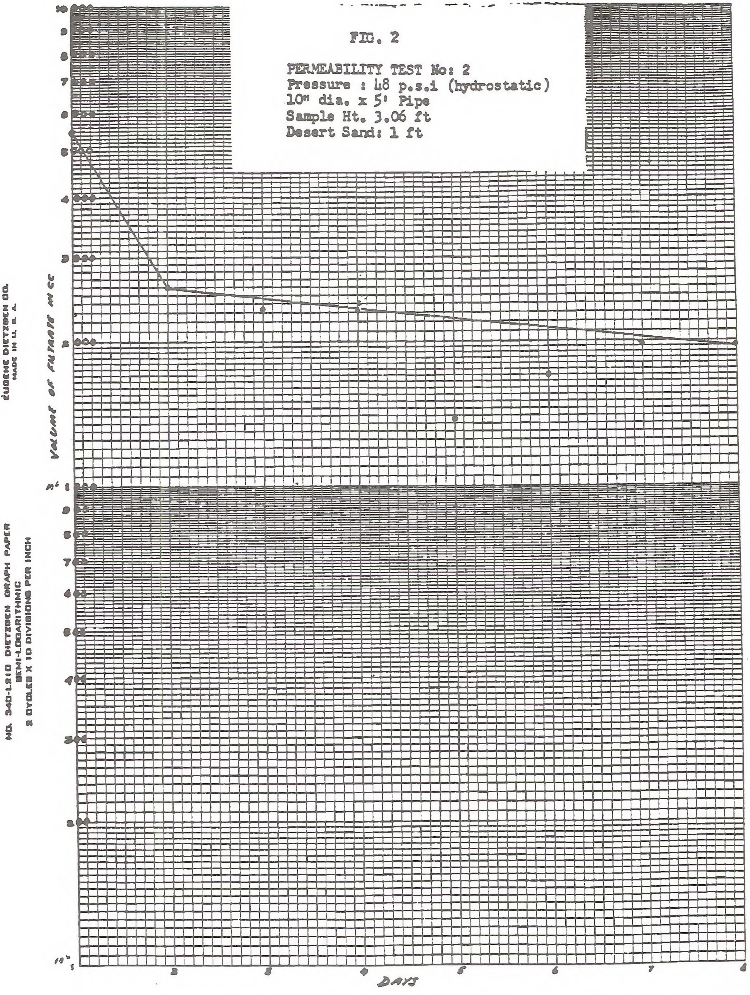


FIG. 2

PERMEABILITY TEST No: 2
Pressure : 48 p.s.i (hydrostatic)
10" dia. x 5' Pipe
Sample Ht. 3.06 ft
Desert Sand: 1 ft

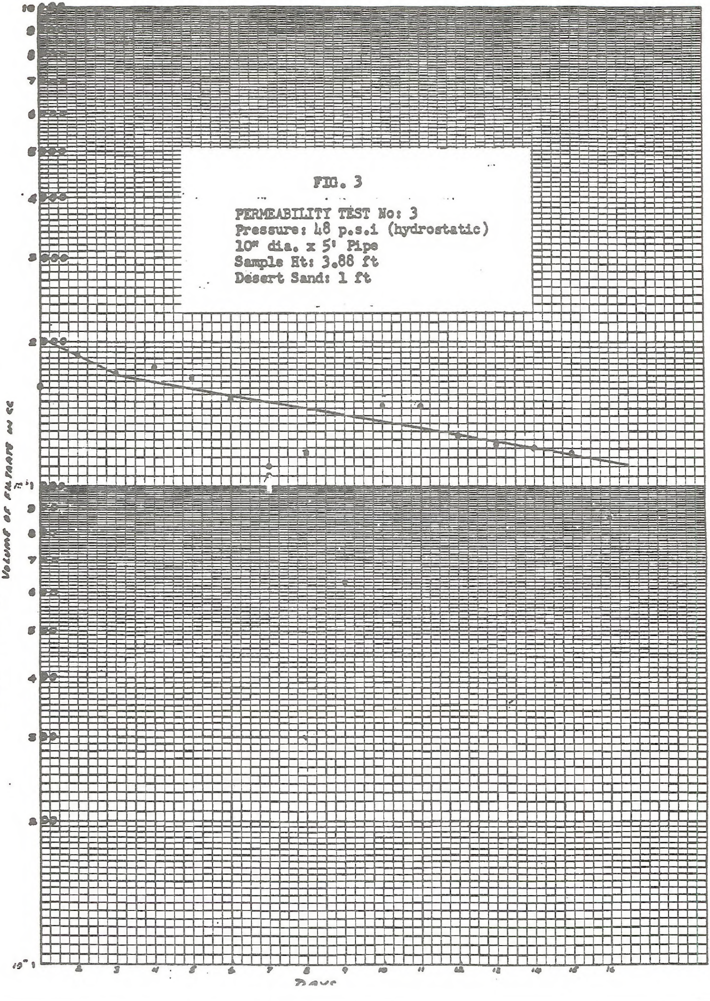


FIG. 3

PERMEABILITY TEST No: 3
Pressure: 48 p.s.i (hydrostatic)
10" dia. x 5' Pipe
Sample Ht: 3.88 ft
Desert Sand: 1 ft

EUGENE DIETZGEN CO.
MADE IN U. S. A.

NO. 340-L210 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
3 CYCLES X 10 DIVISIONS PER INCH

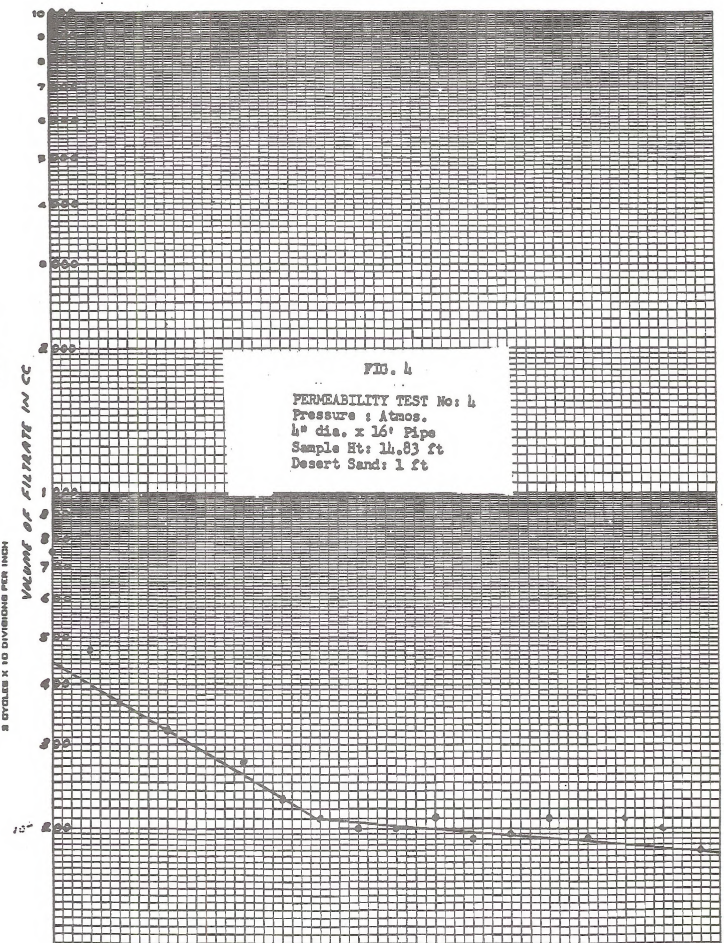


FIG. 4

PERMEABILITY TEST No: 4
Pressure : Atmos.
4" dia. x 16' Pipe
Sample Ht: 14.83 ft
Desert Sand: 1 ft

EUGENE DIETZGEN CO.
MADE IN U. S. A.
NO. 340-L310 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
3 CYCLES X 10 DIVISIONS PER INCH

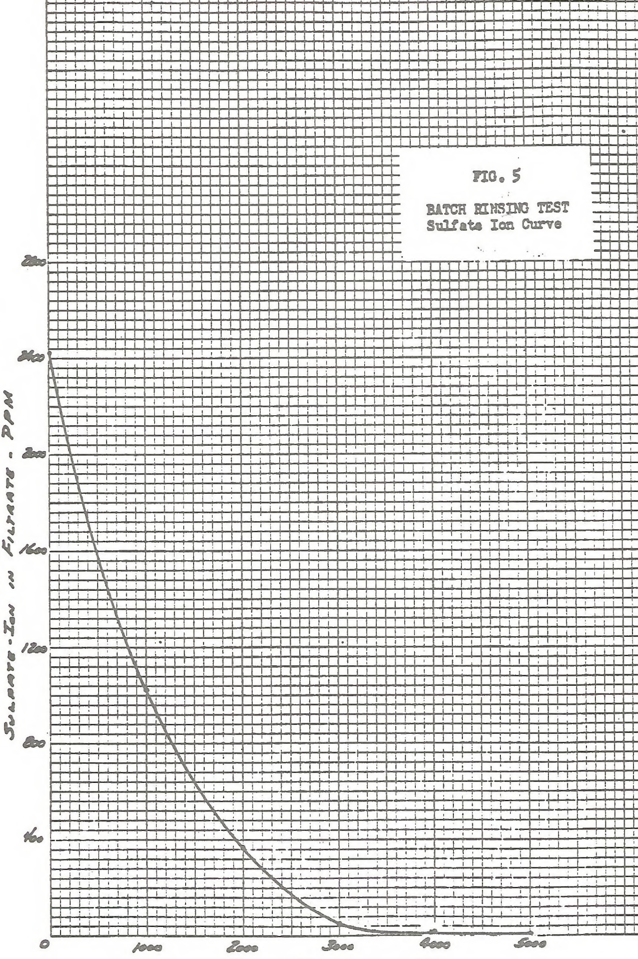


FIG. 5

BATCH RINSING TEST
Sulfate Ion Curve

EUGENE DIETZGEN CO.
MADE IN U. S. A.
NO. 340-10 DIETZGEN GRAPH PAPER
10 X 10 PER INCH

SEEPAGE
CONTROL, INC.

716 SOUTH SEVENTH STREET • P. O. BOX 4425 • PHOENIX, ARIZONA 85030, U. S. A. • PHONE 254-4501

June 12, 1968

SCI #3832-A

Mr. Martin Hughes, Manager
Eagle Mountain Mine
Kaiser Steel Corporation
P. O. Box 158
Eagle Mountain, California

Subject: Seepage from Tailings Ponds

Dear Mr. Hughes:

Since my meeting with you and Harry Conger, I have given your problem considerable thought.

The basic problem is whether or not the groundwater is being or will be polluted or degraded by the alleged seepage from the ponds. The contamination would consist principally of calcium sulfate (gypsum), although it would probably be classed as a salinity problem as far as the pollution board is concerned. There is no question that the filtrate from the ponds is a potential degradent to the good groundwater below the mine if the filtrate reaches the water table. I say a potential degradent rather than pollutant in that the groundwater might not be unduly damaged by the filtrate if the dilution capacity of the groundwater aquifer is large.

Pollution control boards have taken the attitude that if a potential pollutant is being discharged from a plant, it is up to the plant to prove that such discharge will not harm the water resource involved. In the case of a flowing surface stream and a discharge from an outfall line, it is easy to prove lack of harm if stream standards have been established for the discharge point. In the case of seeping water or filtrate and an underground water aquifer, the discharge rate and dilution capacity is difficult if not impossible to determine. In addition, the time lag between discharge or seepage and detection of degradation of the groundwater is great, and is usually irreversible by the time degradation is detected. Because of this, pollution control boards have often denied requests to discharge potential pollutants on land where seepage could reach the groundwater.

Unfortunately, the decisions of these boards are rather wishy-washy and inconsistent, dependent upon the situation. The decisions of the board governing your area are not exceptions.

A material balance using the figures presented by Harry Conger and Dave Wick indicates that 754 acre feet of water is unaccounted for in your pond operation.

Three things must be evaluated in accounting for this discrepancy, namely measurement error, evaporation and seepage. Measurement of evaporation is rather nebulous, but I think the pollution board would accept a minimum evaporation rate of 7 feet per year, or 259 acre feet per year from the 37 acre pond. This leaves 495 acre feet for seepage and measurement error. If we assume no measurement error, 495 acre feet over 37 acres amounts to less than 0.04 cfd (cubic feet of water per square foot of wetted area per day), which is much lower than the average concrete lining used in canals and reservoirs.

In short, Mr. Hughes, you evidently have a very low seepage rate from your tailing ponds. To reduce this rate would be difficult and extremely expensive. I believe your problem lies in convincing the pollution board that minimal degradation of the groundwater exists.

This is an interdisciplinary matter that might require chemical, hydrological and engineering background. I have worked in the chemical end, but am not skilled in the hydrological end, and do not possess an engineering registration in California.

My background has been in water quality, seepage control investigations, and chemical-physical properties of clay type slurries (rheology, contamination, filtration characteristics, etc). This work has been on a research type basis rather than as engineering because of the limited general knowledge in the field. If I can be of service to you on a chemical and seepage basis, fine, but there is no way that I can offer engineering services in California. My charge for chemical seepage and pollution problem work is $150.00 per day plus necessary travel and out-of-pocket expenses.

I'm sorry that I can't be more specific, but there is such little data on your problem at the present that is precise enough to base conclusions on. Please advise if there is some way in which I can be of service to you.

Very truly yours,

J. Harlan Glenn

J. Harlan Glenn

JHG/zh

W-3

H. M. Conger
Assistant Manager
Eagle Mountain

M. J. Hughes ✓
K. B. Powell

July 12, 1968

H. S. Scott

H. S. Scott
Chief Engineer

Eagle Mountain Mine

Pinto Well No. 2 - Water Level

Pinto Well No. 2 was probed this day by H. S. Scott and J. G. Gill. The water level was at 917 feet elevation. The Engineering Department will continue to probe this well on a semi-annual basis, July and January.

HSS:gde

711-J Hughes

K1-3

6-14

EKVPXV
ORE IN 7
2 FOR PX K B POWELL

SUBJECT: PINTO WELL NO. 2 WATER TABLE DATA.

RECORD OF PINTO NO. 2 WATER TABLE FALL IS FROM 1957 TO 1967 AND IS AS FOLLOWS:

GROUND ELEVATION AT WELL HEAD EQUALS [illegible] FEET.

YEAR	WATER TABLE ELEV.
1957	926 FEET
1958	926 FEET
1959	926 FEET
1960	925 FEET
1961	924 FEET
1962	922 FEET
1963	922 FEET
1964	922 FEET
1965	919 FEET
1966	918 FEET
1967	917 FEET

THE INFORMATION TAKEN FROM U.S.G.S. PUBLICATION, 'RECORDS OF WATER LEVEL AND PUMPAGE FOR 1967 IN JOSHUA TREE NATIONAL MONUMENT, CALIFORNIA'. THIS WAS PREPARED IN COOPERATION WITH THE NATIONAL PARK SERVICE.

H M CONGER
7-10-68 340P

KAISER
STEEL

Kl-12

MEMO TO: M. J. Hughes
Manager
Eagle Mountain Mine

COPIES TO: J. E. Good

DATE: September 26, 1968

H M Conger

FROM: H. M. Conger
Assistant Manager

AT: Eagle Mountain Mine

SUBJECT: Results of the Meeting with the Colorado River Basin Regional Water Quality Control Board.

The Colorado River Basin Regional Water Quality Control Board held their quarterly meeting in Coachella at 10:00 A.M. this morning. The third item on their agenda was to consider the adoption of a resolution which set forth requirements under which Kaiser Steel Corporation could dispose of slime tailings at Eagle Mountain. Jim Hawke, soils consultant, John Englund and myself attended the meeting.

To recap, Kaiser Steel Corporation engaged Hawke Engineers, a consulting firm specializing in soil mechanics problems, to determine the least expensive way to insure that water from Eagle Mountain mill tailings will not pollute the ground waters of the Palen Hydro Subunit. Hawke Engineers were instructed by Kaiser to prepare a report, based on lab tests conducted in both Hawke's and Kaiser's laboratories, showing that the slime tailings being discharged were so impermiable that only a minimum of water could pass through the tailings and into the valley alluvium. The results of this work was that a 3 foot thick "blanket" of tailings at 25% moisture would control the seepage rate at not over 5.5 acre feet per year per acre, with a pond height of 80 feet. Laboratory tests further proved that the water which does pass through this blanket will be absorbed in the alluvium and will never reach the ground water system.

The Hawke Report was submitted to Kaiser Steel officials in mid-July and after study was accepted as a satisfactory alternate to having to line the bottom of the tailings basin with a plastic lining at from $0.05 to $0.07 per square foot. On July 31, 1968, 10 copies of the Hawke Report were sent to the Executive Officer of the Regional Board who in turn distributed them to the Board members and their staffs. Accompanying the reports was a letter from this writer to the Board requesting that, based on the conclusions and recommendations of the Hawke Report, Kaiser Steel Corporation be placed on the Board's September meeting agenda and at that time the Board would set requirements for construction of future tailings ponds at Eagle Mountain, and further, that these requirements be consistent with the findings of the Hawke Report.

On week prior to the Sept. 26 Regional Board meeting, Art Swajian, executive officer, sent Kaiser a copy of the draft resolution he had prepared for the Board's consideration. Close study of the draft disclosed nothing that would adversely affect Kaiser's operation at Eagle Mountain as the report was completely consistent with the Hawke Report.

At the meeting today, the Regional Board approved the tentative resolution as written and placed four restrictions on Kaiser Steel:

1. The 3 foot "blanket" would be constructed under the supervision of a registered civil engineer who is qualified in soil mechanics.

2. These requirements apply only to the construction and use of KSC #5 slime pond.

3. A water balance be submitted to the Regional Board monthly.

4. A water analysis of tailing water be submitted to the Board semi-annually.

These four restrictions will not cause Kaiser a problem. It is recommended that Hawke Engineers be retained to check the construction of the 3 foot "blanket" and certify in writing their findings to the Board. If you agree, Tom Mahon and Jim Good will proceed to ammend Hawke's contract to include this work. Kaiser Steel was already complying with parts 3 and 4 so these are no additional burden. It was gratifying to note that the Board did not require that the water balance be monitered by an outside party. This would have presented an awkward situation.

Unfortunately, the Board limited this resolution to #5 pond only. It was hoped that the resolution would have included all future ponds. However, by demonstrating that the #5 pond does not exceed the stated seepage, it is very likely that the Board will grant Kaiser Steel permission to build the large pond out in the center of the valley next.

During the month of November, enough of #5 pond will be excavated that construction of the 3 foot "blanket" can be started.

In the estimation of this writer, Hawke Engineers has performed a very valuable service to Kaiser Steel Corp. They have proven to the Regional Board's satisfaction that ponds properly constructed with Kaiser's own slime tailings hold seepage within acceptable limits without having to resort to a very expensive plastic lining and, equally important, assisted materially in getting the Regional Board off "dead center" in granting Kaiser permission to construct a new tailings pond.

W-12

COPY

ES No. 21

December 14, 1967

E. M. Conger
Assistant Manager
Eagle Mountain

M. J. Hughes ✓
J. E. Good
J. O. Englund

D. E. Wick
Superintendent
Engineering Services
Eagle Mountain

Meeting with Water Quality Control Board

When: December 14, 1967, 10:00 A.M.
Where: Coachella Valley County Water District Office
Coachella, California
Present: D. E. Wick, KSC Eagle Mountain
J. E. Good, KSC Fontana
Phil Abrams, Consultant for KSC, Palm Springs
Members of County Water District and State Department of Water Resources.

1. We were second on the agenda after a 1/2 hour discussion of waste discharge requirements of other communities.

2. Received a copy of a memorandum from the DWR dated Dec. 8 (attached) as to their remarks on our reports. Discussed this before the meeting with Phil Abrams.

3. Mr. A. Swajian explained the history and the program Kaiser has followed in reporting waste water flow as suggested by the Board. He made it clear that we have made a sincere effort, within our means, to obtain and report the quantities required. While they feel the reported evaporation rate is high they could not reject the report on that basis. As suggested by the DWR memorandum, Mr. Swajian thought we should make monthly estimates of our slime water flows and quarterly analyses of our pond water and submit these findings regularly. We agreed that this would be done. Therefore, without objection from anyone present, Resolution No. 67-2 was amended to provide for these monthly reports.

4. In reviewing the water flows, as shown on 67-2 as reported by KSC in November, 1966, we find them to be in gross error. The actual acre feet of water to the pond in 1965, for instance, is 1,115 and the return water must have been under 200 acre feet. Our total maximum annual water rate from the wells is presently about 7,000 acre feet.

The Resources Agency of California

COLORADO RIVER BASIN REGIONAL WATER QUALITY CONTROL BOARD
82-380 Miles Avenue, Indio, California 92201 (P.O.Drawer I)
Phone DI 7-1397

AGENDA

Fourth Regular Meeting of 1967
To Be Held in the Board of Directors Chambers
Coachella Valley County Water District, Coachella

December 14, 1967 - 10:00 A.M.

1. Roll Call and Introduction of Guests
2. Minutes of the Regular Meeting of September 28, 1967
3. Waste Discharge Requirements

Resolution No.	Description
67-15	Senator Wash Reservoir - Imperial County
67-17	Southern Counties Gas Co. - Blythe
67-18	Chevron Chemical Co. - Thermal
67-19	Imperial Hot Mineral Spa - Sewage Disposal
67-20	Riverside County Dumpsite - Thermal
67-21	Riverside County Dumpsite - Mecca
67-22	Riverside County Dumpsite - Des. Hot Springs
67-23	Riverside County Dumpsite - Blythe
67-24	Imperial Hot Mineral Spa - Mineral Waters

4. Kaiser Steel Corporation - Industrial Wastes Disposal
5. Coordinated Areawide Sewerage System Plan for Palo Verde Valley Extended Area
6. Salton Sea Studies
7. Standards on Interstate Waters
8. Waste Treatment Facilities Need Study
9. Report on December 1, 1967 Meetings:
    a. State Water Resources Control Board
    b. Water Quality Advisory Committee
10. Other Business
11. Arrangements for next meeting
12. Adjournment

MEMORANDUM

TO: Colorado River Basin Regional
Water Quality Control Board (No.7)
Indio, Calif.

Attention: Mr. Arthur Swajian
Executive Officer

Date: Dec. 8, 1967

Subject: Kaiser Steel Corp.
Eagle Mountain Mine
Industrial Waste
Discharge

FROM: Department of Water Resources
Los Angeles, California 90005

As you requested in your letter dated November 13, 1967, and the discussion of the subject disposal operation on November 28, 1967, we have reviewed the Kaiser Steel Corporation's report entitled, "Fine Tailings Disposal, Water Recovery and Loss Report for 6-Month Period; April 1 - September, 1967, Inclusive".

Waste Water Inflow and Outflow at Pond

To estimate the volume of percolation, the following information was provided by the Kaiser Steel Corporation:

Item	1965 a/	1967 b/
Inflow to Pond	8,350 AF/yr.	863.23 AF/6 mo.
Outflow from Pond	2,360 AF/yr.	111.92 AF/6 mo.
Storage within Pond	---	364.32 AF/6 mo.
Evaporation	---	339.53 AF/6 mo. c/
Percolation	---	47.44 AF/6 mo.

a/ Based on Kaiser Steel Corporation letter report on November 9,1966.
b/ Based on Kaiser Steel Corp.letter report dated November 20,1967.
c/ Estimated by Kaiser Steel Corp. at an equivalent of 19.4 feet/yr.

After reviewing and evaluating the information above and the reports from which it was drawn, the following major comments are presented:

1. There is a large difference in the volumes for 1965 and 1967, assuming the volume for the subsequent six months in 1967-68 will be the same as the reported six months in 1967.

(continued)

COPY

2. We believe that Kaiser's estimate of the rate of evaporation (19.4 feet/yr.) is excessively high; a reasonable rate would range from 6 to 7 feet per year. To obtain a reliable estimate of the evaporation rate, a standard method and equipment that have been field-tested by the Weather Bureau should have been employed for measuring evaporation and related information.

3. Based on a conservative evaporation rate of 7 feet per year and inflow-outflow estimates provided by Kaiser, the continued percolation of waste water from the pond is estimated to be about 530 acre-feet/yr.; this amount of water with high mineral concentrations is a threat to the beneficial uses of water of the Chuchawalla Valley. The timing and extent of probable damage would depend, among other factors, on (a) the quality and quantity of waste water percolating; (b) complex conditions of both the zones of aeration and saturation; and (c) relative location of groundwater pumped within the Valley.

4. The waste water percolating from the pond has a high concentration of minerals, which is conceivably a threat to the beneficial uses of the receiving groundwater; an indication of the composition of the waste water is presented in Resolution No. 67-2.

5. It is estimated there are over 40 million acre-feet of ground water in storage, although not all is usable and little is known in detail of its occurrence and water quality character. The approximation clearly indicates the presence of large ground water resources that should be protected for beneficial use.

Direct Subsurface Observations

In an effort to provide information on percolation -- or the lack of it -- Kaiser has drilled three holes. After reviewing and evaluating the information provided by Kaiser regarding these holes, our key comments are as follows:

1. The information presented does not provide reasonable evidence of the amount -- including the zero amount -- of percolation below the ponds, because of the extreme complexity of the factors requiring measurement, in order to obtain reliable, useful results.

2. Determination of where and how a fluid waste may travel from disposal site to the saturated zone requires detailed information on the physical characteristics and the location and extent of all pervious and impervious materials in the unsaturated zone.

3. In an unsaturated zone having variations in permeability and clay lenses, the inflow of water may be impeded by the lenses and perched water zones may occur; thus the water could spread laterally until it finds a way around the lens. In some cases, the impermeable layer may be dipping in a certain direction, and the lateral flow will be affected by the direction of the dip.

(continued)

4. The wells drilled to detect the extent of water percolation may not intercept or encounter any moisture, due to a possible condition in which impermeable layers dip away from the drill holes.

5. To obtain the required information, the locations and number of drill holes must be carefully selected and the drilling monitored. This must be followed by continuous observation and testing of the moisture content and flow with accurate instruments, such as the neutron probe. The observations may have to extend over a period of years because of the extremely slow movement of water. The entire operation which should be performed under the close supervision of specialists in this field, is both costly and time-consuming. Even under controlled conditions, the results may not provide conclusive evidence because of the complex nature of the phenomenon being observed.

Concluding Remarks

The attempt at direct subsurface observation has not provided evidence of percolation or the lack of it. An adequate program to obtain such evidence will be costly and time-consuming. We believe the expenditure of large amounts of money and time to obtain this evidence is not necessary to arrive at an estimate of percolation from the pond.

The evaluation of waste water inflow and outflow at the pond is a practicable method for estimating the amount of percolation from the pond for use in establishing waste discharge requirements.

In prescribing specific requirements for waste discharge, the Board should obtain from Kaiser the following information:

1. Monthly estimates on (a) inflow to the pond, (b) outflow from it, and (c) storage in it.

2. Quarterly reports on the chemical composition of the water discharging into the pond and the water in it.

By obtaining the above information, it will be possible to continue to reasonably evaluate both the quality and quantity aspect of this matter.

//signed//
James J. Doody
District Engineer
Southern District

W-2

IN REPLY REFER TO:
CAL-W80

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Water Resources Division
Rm. 8024, 650 Capitol Mall
Sacramento, California, 95814

February 17, 1965

Mr. Martin J. Hughes, General Manager
Kaiser Steel Corporation
Eagle Mountain Mine
Eagle Mountain, California

Attention: Mr. Richard W. Brummett, Chief Engineer

Dear Mr. Hughes:

Thank you for the prompt reply to our letter of January 20, 1965, requesting records of monthly pumpage for 1964 from your wells in Pinto Basin.

Enclosed is a tabulation of pumpage by Kaiser Steel Corp. for 1960-64, a tabulation of the water level in well 3S/15E-4J1 (Kaiser well 2) for 1954-64, and a hydrograph showing the pumpage from Pinto Basin and the water-level change of Kaiser well 2 for 1958-64.

Sincerely yours,

For the district geologist

John S. Bader
J. S. Bader

Enclosures

Table .--Pumpage from wells in Pinto Basin by the Kaiser Steel Corp. for the calendar years 1960-65[1]

[Metered in gallons by Kaiser Steel Corp., except as indicated]

	1960	1961	1962	1963	1964	1965
January	a47,438,000	40,642,000	a41,750,000	a94,895,000	90,566,000	
February	a47,438,000	38,996,000	a39,500,000	a91,789,000	93,578,000	
March	47,642,240	53,092,500	a54,650,000	a96,320,000	95,823,000	
April	49,393,760	a55,044,400	a55,540,000	a93,029,000	95,449,000	
May	50,635,000	a58,658,100	a59,790,000	a92,799,000	95,247,000	
June	54,746,300	60,845,000	a62,850,000	102,085,000	94,186,000	
July	44,657,200	67,979,500	89,318,000	110,127,000	94,964,000	
August	55,807,800	63,479,400	77,806,000	105,358,000	90,967,000	
September	51,653,516	a57,562,700	69,830,000	92,943,000	91,230,000	
October	42,101,084	a46,917,500	64,742,000	118,039,000	93,676,000	
November	38,538,600	a42,947,400	a66,400,000	93,121,000	105,748,000	
December	39,306,800	43,692,000	a67,280,000	99,776,000	93,892,000	
Total[2] (gal)	569,000,000	630,000,000	749,000,000	1,190,000,000	1,140,000,000	
Total[3] (ac-ft)	1,700	1,900	2,300	3,600	3,500	

1. For pumpage prior to 1960, see U.S. Geological Survey Water-Supply Paper 1475-O, "Hydrologic and Geologic Reconnaissance of Pinto Basin, Joshua Tree National Monument, Riverside County, California," by Fred Kunkel, 1963, p. 558.

2. Rounded to three significant figures.

3. Rounded to two significant figures.

a. Meter not in operation; quantity estimated by Kaiser Steel Corp.

Experimental Form
CAL 63-1

UNITED STATES GEOLOGICAL SURVEY - WATER RESOURCES DIVISION - GROUND WATER BRANCH

WATER LEVELS AND ARTESIAN PRESSURES IN OBSERVATION WELLS

CALIFORNIA COUNTY Riverside AREA OR BASIN Joshua Tree National Monument (7-6)

Well Number 3S/15E-4J1 S: Depth of Well 575 ft.; Altitude of Land-Surface Datum 1,080.6 feet above mean sea level.

Description of Well: National Park Service (Kaiser No. 2) At east end of Pinto Basin near Kaiser Steel Company's Eagle Mountain wells. Drilled well in alluvium, diameter 16 inches.

Records available 1954-; Highest water level ____ ft. ____, 19__; Lowest ____ ft. ____, 19__.

All water levels are referenced to Land surface datum.

1961		1962		1963		1964		1965	
Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 1,	156.14	Nov. 1,	158.79	Mar. 14,	159.28	MAR 19	159.49		
Mar. 28,	156.81			Oct. 31,	159.34	Nov. 25	159.58		
Nov. 9,	157.49								
Nov. 16,	157.77								

Continued
Well No 3S/15E-4J

Experimental Form
CAL 63-1

UNITED STATES GEOLOGICAL SURVEY - WATER RESOURCES DIVISION - GROUND WATER BRANCH

WATER LEVELS AND ARTESIAN PRESSURES IN OBSERVATION WELLS

CALIFORNIA COUNTY Riverside AREA OR BASIN Joshua Tree National Monument (7-6)

Well Number 3S/15E-4N1 S; Depth of Well 575 ft.; Altitude of Land-Surface Datum 1,080.6 feet above mean sea level.

Description of Well: National Park Service (Kaiser No. 2). At east end of Pinto Basin near Kaiser Steel Company's Eagle Mountain wells. Drilled well in alluvium, diameter 16 inches.

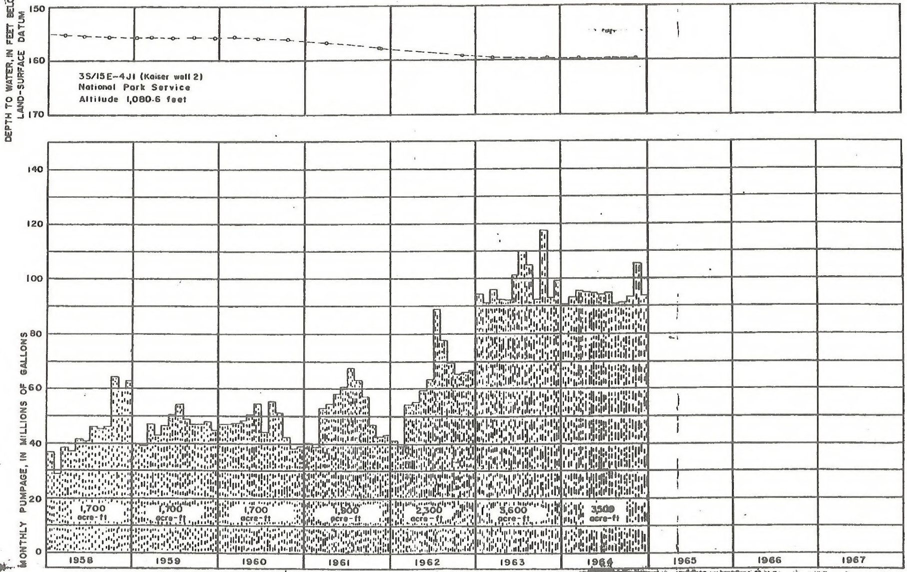
Records available 1954-____; Highest water level ____ ft. ____, 19__; Lowest ____ ft. ____, 19__.

All water levels are referenced to land surface datum.

1954-1955		1956		1957-1958		1959		1960	
Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
1954		Feb. 9,	155.2	1957		Jan. 7,	155.7	Mar. 1,	155.6
Dec. 4,	e150			May 18,	155.21				
		Feb. 11,	155.1			Mar. 12,	155.6	June 12,	155.90
				May 19,	155.65				
		Feb. 12,	155.0			June 11,	155.8	Oct. 13,	155.93
1955				June 26,	155.48				
June 22,	154.94	Mar. 23,	155.0			Sept. 8,	155.71		
				Aug. 21,	e155.49				
Sept. 22,	155.20	May 27,	154.88			Dec. 10,	155.74		
				Sept. 18,	e155.37				
Dec. 22,	155.6	July 27,	e155.3						
				Nov. 30,	155.0				
		Aug. 18,	155.3						
		Sept. 19,	155.7						
				1958					
				Mar. 2,	155.1				
				May 30,	155.4				
				Sept. 15,	155.6				

Well No. 3S/15E-4[illegible]

U.S. GEOLOGICAL SURVEY



HYDROGRAPH OF WELL AND PUMPAGE IN THE EASTERN PART OF PINTO BASIN

W-2

R. G. Hears
Manager
Mining and Raw Materials

M. J. Hughes

June 22, 1964

K B Powell

K. B. Powell
Superintendent
Mining and Raw Materials
Fontana

Eagle Mountain New Wells
Water Analyses

Attached herewith is a copy of a report and analyses of the water in the two new wells which are being developed.

You will note the higher than allowable fluoride content. This is not good, however the water as planned now will all go into the existing industrial reservoir near the tailings ponds and, therefore, should never get into the system serving the housing area or the drinking water lines in the plant area.

It should also be noted that the samples stood for a period prior to running the tests. In fact, one sample arrived in a container without a cap. When wells are started and lines well flushed, adequate samples, correctly taken, will be handled to get a more correct analysis. These results should be considered preliminary until that time.

KBP:mmt
attachment

KAISER STEEL CORPORATION
Inter-Office Memorandum

To: Ken Powell
Superintendent
Raw Materials

Date: June 18, 1964

From: W A Richardson
W. A. Richardson
Chief Chemist

By: K. R. Fitch
Research Chemist

Subject: Well Waters - Eagle Mountain Area
Wells No. 1, Section 2 and No. 1, Section 11

Situation These wells are located five miles south of Pinto Wells. Is the water suitable for drinking?

Note These water samples had stood around in the plastic bottles for about three weeks before reaching the laboratory.

Conclusions

1. The waters do not meet U. S. Public Health Service Drinking Water Standards.
2. They were not too bad and could be made suitable for drinking by proper dilution (or treatment).

Discussion The fluoride content of the waters involves an immediate difficulty for drinking purposes. The U. S. Standards give a limit, not to be exceeded, of 0.7 to 1.2 ppm (mg per liter) and as a cause for rejection, 1.4 to 2.4 ppm. The limits vary depending on the temperatures involved (lower concentrations at higher temperatures). They are predicated on the mottling effect on teeth rather than for strictly toxicological reasons. Our present mine waters run 2 to 2.5 ppm which is about the limit. The well waters would have to be mixed to bring the fluoride content down to safe maximum levels.

The total solids run well above the usual 500 ppm maximum. However, suitability for drinking depends much on their contents. Here the sulfate fluctuated around the 250 ppm maximum but the chloride amounted to only about half of its 250 ppm limit. Manganese however ranged up to three times the acceptable level of 0.05 ppm and the dilution necessary to bring this down would amount to about the same as for fluoride. Borate and strontium were both present at low levels and copper was far below its limit. No barium showed up spectroscopically.

Waters generally contain some oil and grease from pumps, etc. A direct extraction by normal pentane recovered the oil and the organic part of the grease after subsequent acidification by HCl. This left some water soluble organics to be recovered by evaporation to dryness and taking up with tertiary butyl alcohol, etc. Any containers which previously held detergent and soap solutions, etc., could prossible furnish some

Discussion Continued.

to the water sample. But waters passing through the soil always pick up some organic matter which does not involve human pollution. Phosphates are sometimes recognized as products of human or animal metabolism and the very low contents here point away from any such contamination. Waters passing through soils often contain bacteria of non pathogenic types. No such tests were run.

The nitrate contents had of course changed in the time the water had stood around in the plastic bottles. Organic matter tends to combine with nitrates and dissolved oxygen causing their removal especially when the water is removed from the ground and warms up. So the figures have come down from the originals by an unknown amount. The quantities probably ran over 30 ppm but as an educated guess we do not think they reached the U. S. Standard limit of 45.

Analysis Attached.

KRF/ml

Analysis (Spectroscopic and Wet)

	No. 1 Section 2	No 1 Section 11
pH	8.00	8.02
Suspended Solids	24 ppm	36 ppm
Dissolved Solids	775 "	773 "
Total Solids	799 "	809 "
CO_3	0 "	0 "
HCO_3	105 "	183 "
Total Alkalinity	105 "	183 "
Cl^-	128 "	125 "
$SO_4^=$	283 "	200 "
$PO_4^{\equiv}$	.03 "	.035 "
F^-	6.0 "	5.5 "
NO_3^-	11 "	28 "
SiO_2	13.5 "	18.7 "
Al_2O_3	2.6 "	4.5 "
MgO	3.7 "	3.7 "
B_2O_3	1.0 "	.9 "
TiO_2	.4 "	.4 "
Ca^{++}	33.0 "	21.0 "
Sr^{++}	1.5 "	.8 "
Na^+	220 "	262 "
K^+	2.1 "	2.6 "
NH_4^+	1.4 "	1.8 "
Cu	.05 "	.05 "
Mn	.15 "	.08 "
Oil	6.0 "	1.5 "
"Grease"	3.0 "	3.0 "
Water Soluble Organics	6.0 "	6.0 "

W

KAISER STEEL CORPORATION
SUPPLEMENTARY
WATER RESERVE REPORT
CHUCKWALLA VALLEY - PINTO BASIN
RIVERSIDE COUNTY, CALIFORNIA

Arthur F. Peterson January, 1964

Submitted at Riverside Co. Admin. Center
Scoping meeting

KAISER STEEL CORPORATION

SUPPLEMENTARY WATER RESERVE REPORT

CHUCKWALLA VALLEY - PINTO BASIN RIVERSIDE COUNTY, CALIFORNIA

By Arthur F. Peterson

INTRODUCTION

This report is submitted as a supplement to, and is to be considered a part of, the original study completed by the writer in January, 1960. The geological maps and cross-sections, well data, ground water flow patterns and other material presented therein are to be used in conjunction with this report.

The pertinent geologic features of the area are quite well known and stratigraphy, sedimentation patterns and aquifer delineation has been defined. However, more information has been made available to substantiate and more clearly define the zonal characteristics of the unconsolidated valley fill through the additional drilling of water wells since 1960. This applies only to the central area (Airport) of the Chuckwalla Valley. To the writer's knowledge no additional wells have been drilled in the Pinto Basin Area since the completion of the Kaiser Steel Corporation Well No. 3 in 1957.

Several hydrologic and reconnaissance geologic studies of the subject areas have been made in recent years by the United States Geological Survey and the California Department of Water Resources on a Federal - State cooperative ground water investiagion basis. These reports are available (see references) and were reviewed for critical analysis. The writer furnished a considerable portion of the data contained in the most recent publication - - - "Data on

Water Wells and Springs in the Chuckwalla Valley Area, Riverside County, California", by F. W. Giessner. Other selected references were used and may be noted in the Appendix of this report.

The Pinto Basin and Chuckwalla Valley Areas have been defined in previous reports and their configuration noted. Areal distribution of the consolidated and non-consolidated rocks have been established, although the geologic age of some of the younger sediments, including the more recent valley fill, has not been clearly determined.

Added geological and hydrological information used in this study was also obtained from the examination of driller's logs, electric logs, and well pumping tests, including fluid levels and discharge rates, from the more recent wells drilled in the central Chuckwalla Valley Area. This information is considered confidential and will be released only through written consent of the Kaiser Steel Corporation and the author.

A large reservoir of ground water occurs in the saturated earth materials beneath the land surface in Pinto Basin and Chuckwalla Valley. Variations in the lithologic character, distribution, and structure of the earth materials controls the occurrence, source, movement, and availability of the ground water. This pertinent data has been presented in the previous study.

The aquifers are distinct lithologic units or combinations of such units that have an appreciably greater transmissibility of fluids than adjacent units (silts and clays). These aquifers store and transmit water that is more readily recoverable in usable quantities.

The aquifers consist mainly of sand, gravel, cobble conglomerates and mixtures thereof. Porosities and permeabilities are considered rather high because most of the valley fill materials have been derived from surrounding quartzitic mountain masses. It is also recognized that some of the less stable material is derived from basalts, phyllites, and schists, which for the greater part, is the source material for the clays and silts found in the unconsolidated rocks comprising the valley fill. The genetic sequence of beds indicates an average of at least 65 percent permeable sand count in most areas, although electric logs on several wells have indicated a sand count as high as 85 percent.

Three distinct geohydrological units have been identified (see Geological Cross-section B-B'). These units have been named the Upper, Middle and Lower Zones and are considered to be more or less distinct hydraulic systems. Deeper drilling in the central portions of both basins will undoubtedly extend the stratigraphic sequence of the basal unit as this area has not been completely penetrated to basement rocks.

Present water demand by the Kaiser Steel Corporation at its Eagle Mountain Mining complex is approximately 2000-gallons per minute, or 9 acre feet per day. It is estimated that this demand will increase at least 60 percent with the contemplated addition of several new facilities. This report, therefore, will consider a 100 percent increase to insure the availability and adequacy of the water supply.

WATER RESERVES

PINTO BASIN AREA

PINTO BASIN

The two existing active water wells used by the Kaiser Steel Corporation are located in the extreme southeastern end of the Pinto Basin, which in turn is near the sedimentary and topographic confluence of the Pinto Basin and the Upper Chuckwalla Valley. Neither of these wells were drilled to the basement complex, thus, aquifer exposure is not complete. Well No. 1 was originally drilled and used as a source of water by the Metropolitan Water District in 1933. It was later acquired by Kaiser Steel Corporation. This well was drilled to a depth of only 547 feet. The present condition of the well can be classed as only fair, inasmuch as it was a cable tool well which has been knife perforated with no gravel enevelope to act as a filtering screen. The well has been cleaned several times and excessive amounts of sand have been found in the lower portion, tending to isolate production from the bottom 80 to 100 feet. Hence, the efficiency and productive capacity of this well could be increased if a pre-perforated liner could be inserted to alleviate the sanding condition. It is recommended that this procedure be adopted the next time the pump bowls are withdrawn from the well.

Well No. 2 was drilled by Kaiser Steel Corporation in 1957 to a total depth of 675 feet and is considered to be adequate for the present. It is a gravel envelope well.

To the writer's knowledge these two installations are the only wells in the Pinto Basin that are presently withdrawing any relatively great amounts of water from this storage area. Present production from these two wells can be sustained for at least 15 years if mechanical and corrosive factors are not considered.

However, if this source is to be maintained either as a constant or a standby source then it is recommended that at least one additional well be drilled in this basin within the next five years. Any new well installation in this area should penetrate the complete stratigraphic section and expose all saturated aquifers to production. This is to insure higher rates of productivity and lesser draw down factors. The new well should be drilled at least one-half mile north and east of the present wells. This will insure adequate drainage and reduce the area extent of the hydraulic "cone of depression". This inverted hydraulic "cone", surrounding any given well or well field, is primarily the curved hydraulic surface expressed horizontally between that static and pumping levels in a well exposed to perforated production. (See Illustration - Appendix.)

The total average thickness of the saturated aquifers in the Pinto Basin has been conservatively estimated at 300 feet. This is the permeable sand count and does not include silt or clay facies. The ground water storage unit in Pinto Basin comprises some 40 square miles. This acreage allotment does not include several small areas that may contribute fluids to the storage basin. No recharge factors are being considered in the estimate of fluid reserves. Thus, the 40 square mile area equals 25,600 acres of storage capacity. Observed porosities obtained from similar sedimentary rocks in Chuckwalla Valley average 28 percent. Permeability and transmissibility factors are considered quite high, in some instances to the several Darcy level. If a maximum efficient ratio between fluid withdrawal and reservoir energy is maintained then at least 70 percent the fluids in storage may be withdrawn from the total porous volumetric mass. Some 30 percent will be retained by surface tension and depleted aquifer delivery components.

Present usage and demand is approximately 2000 gallons per minute, or roughly 9 acre feet per day.

9 acre feet per day = 3,285 Acre Feet Per Year

ESTIMATED TOTAL WATER RESERVES IN PINTO BASIN -

805,280 Acre Feet of Water.

Theoretically, this would indicate enough water to serve the present demand of 3,285 acre feet per year for approximately 2-1/2 centuries. This, of course, would imply the complete dewatering of the Pinto Basin storage area. However, this is not a practical approach because the two existing wells could never drain the complete basin. As previously stated, additional wells would have to be drilled to dewater all the aquifers. Also, it is estimated that at least 20 percent of the water from the Pinto Basin will eventually find its way into the Upper Chuckwalla Valley due to the ground water underflow between these two basins. (See Ground Water Flow Patterns - 1960 Report). Thus, the recoverable available fluids from the Pinto Basin storage area is reduced to roughly 650,000 acre feet.

PINTO BASIN

TOTAL WATER AVAILABLE = 650,000 Acre Feet

and

Double present production to 4000 g/m

or, Approximately 6,570 acre feet per year, then

Water in storage = 90 years production.

WATER RESERVES

CHUCKWALLA VALLEY AREA

CHUCKWALLA VALLEY AREA

Reference is made to the "Preliminary Hydrological & Stratigraphic Report" submitted by the writer to Kaiser Steel Corporation in January, 1960. The present study is to be considered as an up-dating and supplementary report thereto. Considerable more well data and stratigraphic information has been obtained from the drilling and completion of several new water wells, especially in the "Airport - Desert Center Area". The new well data, including several electric log surveys, has confirmed and supported the zonal correlations offered in the January, 1960 report.

The regional distribution of the aquifers in these zones have been more clearly defined and in some instance the permeable sand facies of these aquifers have been increased due to greater penetration of the valley sediments. This, of course, will substantiate the additional water reserves presented herein. It may also be added that no well, to date, has penetrated the complete geological section in or near the central portion of the Chuckwalla storage basin. The estimated thickness of the complete stratigraphic section of unconsolidated valley fill may range as high as 1200 feet plus in the deepest confines of the basin. Hence, it becomes quite obvious that fluid reserves could be greater than herein estimated.

Specific capacities of some of the more recent wells are rated as high as 4000 to 5000 gallons per minute, with a specific yield of some 90 to 100 gallons per minute per foot of draw down. These yields were obtained from wells less than 650 feet in depth; however, the permeable sand development was quite extensive with the overall sand count ranging upward to 85 percent. The foregoing indicates substantial transmissibility components capable of delivering large amounts of water. One well was observed that delivered in excess of 5500 gallons per minute on an initial developing test. This yield was obtained using six stages of 14 inch high capacity bowls with quad-GMC diesel engines for motive power. The engines were capable of delivering 380 HP to the shaft driven geared head and pump. It was noted that draw down factors were not excessive. Yields such as these are not to be considered excessive due to the fact that the energy components in the Chuckwalla Valley storage basin are more or less still in a virgin state. It is estimated that less than 20, 000 acre feet of water has been withdrawn from this storage area to date.

Normal development of water for expansion of agriculture, domestic and industrial uses, could not possibly dewater the basin aquifers in the foreseeable future. The average loss of hydrostatic head to date, in most wells, has been about one-half to one foot per year. A total of 20 wells have been drilled in the central portion of the Chuckwalla Valley. Presently only 5 of these wells are on active status producing water mainly for agricultural purposes. Future development and demand will undoubtedly see all of these wells placed in the active category.

The complete area of the Chuckwalla Valley storage basin has been estimated to embrace some 112 square miles, with a storage capacity of 71,680 acres. This storage area extends from the northernmost confines of the valley to the southeast end near the western limits of Palen Dry Lake (see Ground-Water Flow Map). The demarcation point is considered to be the point of hydro-chemical interface between the fresh waters of the Chuckwalla Valley and the more saline fluids confined in the Palen Dry Lake Area (see 1960 Report, Page 14).

An average of 28 percent porosity for the total volumetric mass has been used in estimating the water reserves, and only 70 percent of the fluid in place has been considered to be producible. The average saturated permeable sand count has been conservatively placed at 475 feet.

WATER RESERVES - CHUCKWALLA VALLEY

6,134,464 Estimated Acre Feet of Water

Considering estimated future demands will withdraw 100,000 acre feet per year,

then,

Available Water Supply = 61 years.

The above, of course, is not realistic because the water demand will increase only gradually as the different facets relative to the usage of water increases. A more realistic approach would be to estimate the complete dewatering of the storage area in some 120 years. This, of course, precludes the systematic development and drilling of additional water wells to drain all the aquifers in this storage area.

The above fluid reserve estimate must also be increased by the estimated 20 percent inflow into the upper Chuckwalla Valley basin from the storage area of the Pinto Basin.

Thus,

CHUCKWALLA VALLEY WATER RESERVES

6,134,464	Acre Feet of Water
161,056	Acre Feet of Water - Estimated Inflow - Pinto Basin
6,295,520	Total Acre Feet Water Available - Chuckwalla Valley

NEW WELL FIELD

A new well field is proposed to supplement the water supply of the Kaiser Steel Corporation in the north central portion of the Chuckwalla Valley. This new location has been selected because of its proximity to Kaiser's mining operation and also to insure adequate aquifer development and storage capacity to sustain water production for many years.

The recommended location for the new well field is the N 1/2 of Section 10, T. 4 S., R. 15 E., SBBM (See Map - Appendix). The following recommendations are offered relative to the well field.

1. Wells should be drilled to a depth of at least 900 feet.
2. Electric logs should be obtained to determine saturated zones and permeable sand count.
3. Well design and construction should be of the gravel envelope type.
4. Casing and perforation design should be adequate to insure the life of a well for at least 30 years.
5. Individual wells should be produced at a maximum efficient ratio, estimated not to be in excess of 1200 gallons per minute.
6. Two new wells should be drilled to insure an added 2000 to 2200 gallons per minute production. These wells should be spaced at least three-eighths of a mile apart.
7. Specific capacity of the wells should be determined during development tests.
8. Permanent installation should be designed and protected from weather elements.

WATER RESERVES - North Central Chuckwalla Valley

The proposed new well field will have a primary storage area of 25 square miles, or 16,000 acres. From projected stratigraphic elements and the "C K" wells drilled by Kaiser Steel Corporation, it has been estimated that at least 400 feet of saturated permeable rocks may be present in this new suggested area. Applying the same formula as used in computing the reserves for the Chuckwalla Valley proper, a total of 1,254,000 acre feet of water has been assigned to this storage area. One must also consider the inflow into this area from the Pinto Basin storage reservoir. These fluids must be considered as almost wholly available to the proposed new well field.

Therefore,

1,254,400 Acre Feet of Water in the Northern Chuckwalla Valley Storage Basin
161,056 Acre Feet of Inflow from Pinto Basin
1,415,456 Acre Feet of Water Available.

Ultimate production estimated at 4000 gallons per minute
(4 wells = 18 acre feet per day).

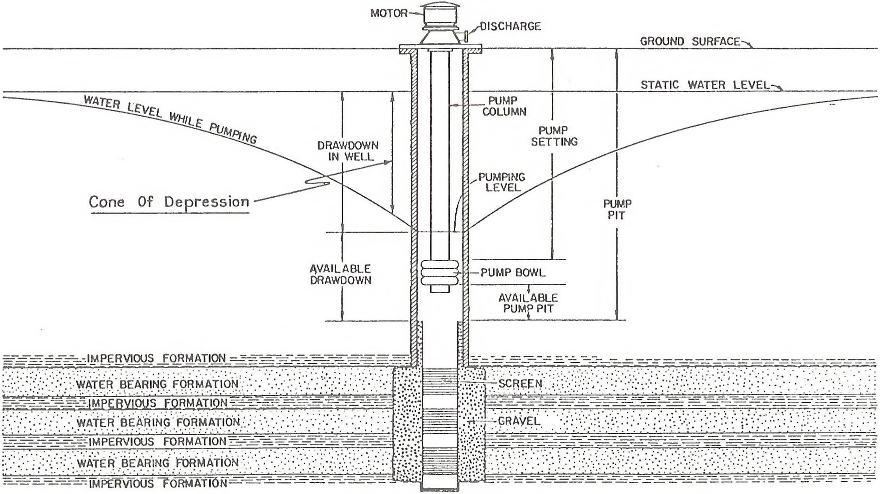
18 acre feet per day = 6570 acre feet per year.

Then, producing

6,570 acre feet per year = complete dewatering of storage
in approximately 215 years.

The above precludes the systematic development of well fluids to drain the entire storage area.

Respectfully submitted,
Arthur F. Peterson
Arthur F. Peterson
Geologist - Engineer
California License #501



WATER WELL SYSTEM

(PD.A

News Release

Office of the State Controller - Gray Davis
300 Capitol Mall, 18th Floor
Sacramento, CA 95814

Contact: Edd Fong (916)445-1895

9/12

FOR RELEASE:
September 7, 1989
7:00 a.m. EDT

CALIFORNIA CONTROLLER URGES ADOPTION OF "VALDEZ PRINCIPLES"

SACRAMENTO -- California Controller Gray Davis today joined New York City Comptroller Harrison J. Goldin in urging American corporations to adopt the "Valdez Principles," a set of business guidelines developed by national environmental organizations, including the National Audubon Society, the National Wildlife Federation, and the Wilderness Society.

Controller Davis is a trustee of the California Public Employee's Retirement System (CalPERS), the largest public employee pension fund in the U.S. with assets exceeding $55 billion, and California's State Teachers Retirement System (STRS) with $28 billion in assets. Davis is also co-chair of the Council of Institutional Investors, a national organization comprised of more than 60 large public and union pension funds.

Attached is Controller Davis' statement.

# # # # #

ef:89:92

SUBMITTED AT COUNTY SCOPING MEETING, A. [illegible]
Sept. 14, 1989

News Release

Office of the State Controller - Gray Davis
6300 Wilshire Blvd., Suite 1270
Los Angeles, CA 90048

Contact: Daniel Zingale (213) 852-5213

STATEMENT BY CALIFORNIA CONTROLLER GRAY DAVIS
September 7, 1989

The "Valdez Principles" offer an unprecedented opportunity for corporate America to actively demonstrate to investors and to consumers their commitment to a clean and healthy environment. I urge them to seize the opportunity.

I will propose these guidelines to California's retirement systems and to the state Legislature. I believe California and other state pension funds should adopt these standards in their corporate governance voting policies.

Protecting the environment is not only good public policy, it's also good for business. It is clear from the numerous oil tanker accidents this year, including the one for which these principles are named, that insufficient attention has been paid to environmental protection.

Efforts to prevent disasters may seem costly, but they are a bargain compared to the price of these accidents. The cleanup costs in Alaska alone will exceed $1 billion. The cost of cleanups and liability suits is the price companies and investors pay for not including environmental protection in their corporate planning. Adopting the "Valdez Principles" will protect shareholders from environmental and financial catastrophe.

One important component is the appointment of at least one director to corporate boards who is qualified to represent environmental interests. Knowledge of advances in environmental and health science would benefit companies and shareholders. On June 5, 1989, New York City Comptroller Jay Goldin and I called on six major oil and chemical companies to name a director with significant environmental expertise and to establish an internal structure to more closely monitor these issues. I am pleased that these principles include pledges to do both.

By supporting these principles, institutional and individual shareholders can also demonstrate our commitment to reducing the health and safety risks to employees and communities. We recognize the cumulative cost of day-to-day practices that endanger workers and spoil our neighborhoods. Corporate managers must protect workers and fully disclose operations that may place employees and communities at risk.

The Social Investment Forum

711 Atlantic Avenue, Boston, MA 02111

617-451-3252

C.E.R.E.S. PROJECT

Coalition for Environmentally
Responsible Economies

Co-Chairs:
Joan Bavaria
Denis Hayes

Executive Director:
Gordon Davidson

Project Director:
Ron Benenati

C.E.R.E.S. Environmental Members:

Citizens for a Better Environment
Earth Day '90
FOE/EPI//Oceanic Institute
Global Tomorrow Coalition
Internal Alliance for Sustainable Agriculture
Lincoln Filene Center for Environmental Affairs
Mike McCloskey, Chairman Sierra Club (ID Purposes only)
National Audubon Society
National Wildlife Federation
Oregon Natural Res. Council
Project Lighthawk
Renew America
S. Utah Wilderness Alliance
U.S. PIRG
Western Alliance for CERES
White River Recreation Assoc.
Wilderness Society

C.E.R.E.S. Social Investment Sustaining Members:

American Capital
Calvert Social Investment Fund & Foundation
Co-op America
Council on Economic Priorities
Franklin Research & Development Corp.
Harrington Associates
Interfaith Center for Corporate Responsibility
New Alternatives Fund
New York State Controller's Office
Parnassus Fund
Progressive Asset Management
Social Responsibility Investment Group
U.S. Trust Company
Working Assets

VALDEZ PRINCIPLES STATEMENT OF INTENT

With these Principles, The Coalition for Environmentally Responsible Economies, or the CERES project of the Social Investment Forum, sets forth broad standards for evaluating activities by corporations that directly or indirectly impact the Earth's biosphere. The CERES Project has created the Valdez Principles to help investors make informed decisions around environmental issues. As representatives of the investment and environmental communities we are asking corporations to join with us by subscribing to these Principles.

Recognizing the complexity of the issues contained in these broad Principles, CERES has attempted to define the Principles as a long term process rather than a static statement. CERES members hope that signatory companies will work with us on the elaboration of the specific requirements of these Principles. Our intent is to create a voluntary mechanism of corporate self-governance that will maintain business practices consistent with the goals of sustaining our fragile environment for future generations, within a culture that respects all life and honors its interdependence.

We ask for a long term commitment to the process of compliance with these Principles, and an additional commitment of assistance and cooperation in the further development of specific standards derived from each of these general principles.

The Social Investment Forum
711 Atlantic Avenue, Boston, MA 02111
617-451-325

Co-Chairs:
Joan Bavaria
Denis Hayes

Executive Director:
Gordon Davidson

Project Director:
Ron Bernard

C.E.R.E.S. Environmental Members:

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Working Assets

C.E.R.E.S. PROJECT

Coalition for Environmentally
Responsible Economies

For Release September 7, 1989

VALDEZ PRINCIPLES

Introduction

By adopting these principles, we publicly affirm our belief that corporations and their shareholders have a direct responsibility for the environment. We believe that corporations must conduct their business as responsible stewards of the environment and seek profits only in a manner that leaves the Earth healthy and safe. We believe that corporations must not compromise the ability of future generations to sustain their needs.

We recognise this to be a long term commitment to update our practices continually in light of advances in technology and new understandings in health and environmental science. We intend to make consistent, measurable progress in implementing these principles and to apply them wherever we operate throughout the world.

1. Protection of the Biosphere

We will minimize and strive to eliminate the release of any pollutant that may cause environmental damage to the air, water, or earth or its inhabitants. We will safeguard habitats in rivers, lakes, wetlands, coastal zones and oceans and will minimize contributing to the greenhouse effect, depletion of the ozone layer, acid rain, or smog.

2. Sustainable Use of Natural Resources

We will make sustainable use of renewable natural resources, such as water, soils and forests. We will conserve nonrenewable natural resources through efficient use and careful planning. We will protect wildlife habitat, open spaces and wilderness, while preseving biodiversity.

3. Reduction and Disposal of Waste

We will minimize the creation of waste, especially hazardous waste, and wherever possible recycle materials. We will dispose of all wastes through safe and responsible methods.

4. Wise Use of Energy

We will make every effort to use environmentally safe and sustainable energy sources to meet our needs. We will invest in improved energy efficiency and conservation in our operations. We will maximize the energy efficiency of products we produce or sell.

5. Risk Reduction

We will minimize the environmental, health and safety risks to our employees and the communities in which we operate by employing safe technologies and operating procedures and by being constantly prepared for emergencies.

6. Marketing of Safe Products and Services

We will sell products or services that minimize adverse environmental impacts and that are safe as consumers commonly use them. We will inform consumers of the environmental impacts of our products or services.

7. Damage Compensation

We will take responsibility for any harm we cause to the environment by making every effort to fully restore the environment and to compensate those persons who are adversely affected.

8. Disclosure

We will disclose to our employees and to the public incidents relating to our operations that cause environmental harm or pose health or safety hazards. We will disclose potential environmental, health or safety hazards posed by our operations, and we will not take any action against employees who report any condition that creates a danger to the environment or poses health and safety hazards.

9. Environmental Directors and Managers

At least one member of the Board of Directors will be a person qualified to represent environmental interests. We will commit management resources to implement these Principles, including the funding of an office of vice president for environmental affairs or an equivalent executive position, reporting directly to the CEO, to monitor and report upon our implementation efforts.

10. Assessment and Annual Audit

We will conduct and make public an annual self-evaluation of our progress in implementing these Principles and in complying with all applicable laws and regulations throughout our worldwide operations. We will work toward the timely creation of independent environmental audit procedures which we will complete annually and make available to the public.

Los Angeles Times Friday, September 8, 19

Environmentalists Unveil List of 'Valdez Principles'

From United Press International

NEW YORK—The Valdez principles, to be used by investors as a measure of a corporation's commitment to safeguarding the environment, were announced Thursday by an environmental and social coalition.

The Coalition for Environmentally Responsible Economies, or CERES, said the 10 principles would be immediately circulated among major U.S. corporations for signatories.

CERES said it would monitor the adherence to the principles by corporations, whether they are signatories or not, and make public the results.

"This is a way for us to use our clout as consumers and investors to influence the way corporations deal with the environment," said New York City Comptroller Harrison J. Goldin, who is a candidate for the Democratic nomination for mayor of New York.

Goldin said the city would incorporate the principles when considering its pension fund investments.

California Controller Gray Davis said in a press statement that he would propose to the state Legislature that it adopt the standards for California state pension fund investments.

The principles, named for the environmentally disastrous oil spill from the Exxon oil tanker Valdez in the Gulf of Alaska in March, address the release of pollutants, sustainable use of natural resources and reduction and disposal of waste.

Representative on Boards

They also address energy efficiency, risk reduction to employees and surrounding communities, the marketing of safe products and services, damage compensation and disclosure of potential environmental hazards.

The inclusion of an environmental representative on corporate boards and annual corporate environmental audits are also called for by the Valdez principles.

Joan Bavaria, co-chairperson of CERES, said the coalition's membership represents some $100 billion in invested assets.

CERES said the Valdez principles are not intended as a disinvestment effort nor is it a negative campaign.

Rather, the coalition said it seeks to reward corporations that behave in a positive manner on environmental issues through the support of investments by individuals and pension plans.

The Valdez principles were drafted by the Sierra Club, the National Audubon Society and the Social Investment Forum, a national trade association of money managers, brokers, bankers and analysts.

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Office of the General Manager

August 2, 1988

Trigg and Dorothy Rourke
Coordinators
Senior Center of Lake Tamarisk
P.O. Box 7102
Desert Center, California 92239

Dear Mr. and Mrs. Rourke:

Storage of Excess Water in the
Abandoned Open Pit Mines at Eagle Mountain

Your letter of July 6, 1988 was referred to the Resources Division for response. Metropolitan appreciates the concern shown by individual citizens as it relates to the future water supply resources of Southern California. With regard to your suggestion, several times in the past Metropolitan has evaluated the possibility of storing excess Colorado River water at various locations in the desert along the aqueduct route. In all but one case, such projects have been found to be prohibitive for any of a number of reasons. Your suggestion that the abandoned pit mines be used for water storage has been reviewed, and for the following reasons, is considered infeasible.

From what is known of the geology of the Eagle Mountain area, it is likely that any water placed in the mine pits would infiltrate rather quickly through the bottom and eventually into the aquifer below. In some similar situations, such as the Coachella Valley, Metropolitan takes advantage of such a phenomenon and uses the aquifer as an underground storage reservoir for excess surface water when it is available. Similarly, the aquifer at Eagle Mountain would be the probable destination of water placed in Kaiser's open pits. Thus, rather than a traditional surface reservoir, your suggestion would likely result in storage underground in the aquifer.

Response
Garbage
Cute

Garbage is [illegible]
We [illegible]
torrential
rain [illegible]
falling
by [illegible]

The water carried in Metropolitan's Colorado River Aqueduct is obtained entirely from the Colorado River. You are correct in noting that Metropolitan owns a well near

Eagle Mountain which draws on the local groundwater supply. The right to use water produced by this well is leased to Kaiser Steel for uses related to its mining operations. Metropolitan retains only the right to use water from the well under limited circumstances.

Prior to the early 1980s, this well was used by Kaiser in part for domestic water supply purposes, principally the needs of the Eagle Mountain School. However, the State Department of Health Services ordered that, because certain naturally occurring constituents in the well water exceeded the State's newly adopted standards for such uses, an alternative domestic supply for the school had to be located. Currently, as a result of the State's order, Kaiser uses this well only for its own industrial purposes. None of the well water is placed in the Colorado River Aqueduct by Metropolitan, nor is it used for any domestic purposes as far as we are aware. Like many aquifers located in southeastern California's desert areas, naturally occurring mineralization has made the water it contains unacceptable for human consumption.

School built?

Constituent State

Mixing excess Colorado River water with the groundwater already present in the aquifer would result only in a larger pool of groundwater which could not be used by Metropolitan or anyone else for domestic purposes. Even if sufficient industrial demand for such low quality water existed in our service area, the State would prohibit Metropolitan from transporting it in our existing aqueduct system due to the poor quality. It is for these reasons that Metropolitan does not regard the project you suggest as feasible.

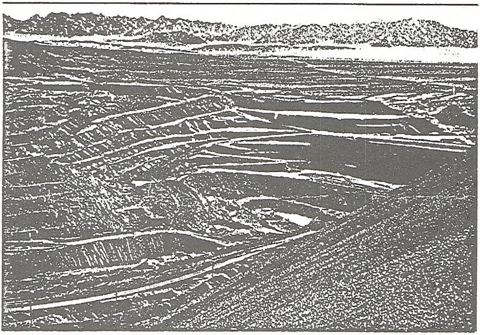
Once again, I appreciate your interest in the water supply future of Southern California. If we can be of assistance again, please feel free to contact me.

Very truly yours,

Richard W. Atwater

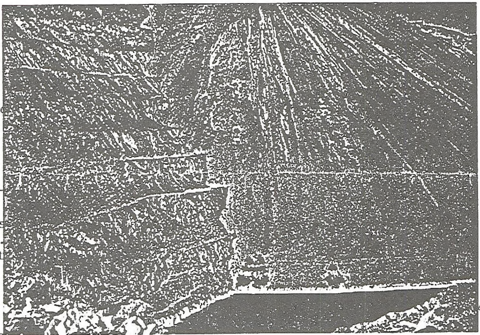
Richard W. Atwater
Director of Resources

JVD:asj



another higher pit with

←Residue



←Trees

←Water

↑ water

East pit at Eagle Mt. In this 1987 picture, ground water is plainly visabl & several palm trees are seen. This is the pit that the Mine Recla-mation Corp. plans to use as a garbage dump. We believe that the water is connected with the 9 million 100 thousand acre ft. aquife in the Chuckawalla valley.

A Calif family uses ½ acre ft. a year.

RECEIVED

SEP 08 1989

MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

RIVERSIDE COUNTY
PLANNING DEPARTMENT

SEP 6 1989

Mr. David Mares, Project Planner
Riverside County Planning Department
4080 Lemon Street 9th Floor
Riverside, California 92501

Dear Mr. Mares:

Notice of Preparation
of Environmental Impact Report
Eagle Mountain Solid Waste Disposal Facility

We have received your Notice of Preparation for the above-referenced project. The proposed project would entail development of a regional Class III solid waste disposal facility in the Eagle Mountains northwest of Desert Center. The project would require approval of a general plan amendment, zoning change, and specific plan. The comments herein represent Metropolitan's response as a potentially affected public agency.

Our review of the project site indicates that Metropolitan's Colorado River Aqueduct lies in close proximity to the proposed project location. The aqueduct is a major source of imported drinking water for Metropolitan's service area of 14.7 million people.

Since the aqueduct is an open water conveyance in the vicinity of the proposed project, water quality is a concern that should be addressed in the EIR. Specific concerns include the possible attraction of birds to the dump, and consequently to the nearby aqueduct, one of the few water sources in the area. Possible impacts on aqueduct water quality from wind-blown contaminants should be investigated. The effects on groundwater underlying the site should also be addressed.

We appreciate the opportunity to provide input to your environmental planning process. Questions regarding Metropolitan's facilities or rights-of-way should be directed to Mr. James Hale, Senior Engineering Technician at (213) 250-6564. Water quality questions should be addressed to Mr. Edward Means, Associate Director of Water Quality, at (213) 250-6412.

Very truly yours,

Roberta L. Soltz, Ph.D.
Environmental Branch Head

JMG/ms

NI

Southern California Edison Company

P. O. BOX 788

RIALTO, CALIFORNIA 92376

2885 FOOTHILL BOULEVARD

SAN BERNARDINO, CALIFORNIA 92402

JOHN D. WYATT
REGIONAL AFFAIRS MANAGER
EASTERN DIVISION

TELEPHONE
(714) 820-5236

RECEIVED
SEP 07 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

August 31, 1989

David Mares
County of Riverside Planner
4080 Lemon Street, 9th Floor
Riverside, CA 92501

Subject: Eagle Mountain Project
Environmental Impact Report

Mr. Mares:

This is to advise the County of Riverside that the subject area is located within the service territory of the Southern California Edison Company and the associated electrical load growth is within the parameters of the overall projected load growth which we are planning to meet in this area.

Unless the demand for electrical generating capacity exceeds our estimates, and provided that there are no unexpected outages to major sources of electrical supply, we expect to meet our electrical requirements for the next several years.

Very truly yours,

J. D. Wyatt

J. D. Wyatt

JDW/kag
EglMtn.JDW

cc: B. R. Hicks

PD.A

C. G. Boyd & Associates
7548 LAKESIDE DRIVE
RIVERSIDE, CALIFORNIA 92509
(714) 681-2954

SUBJECT: Landfill Alternative

TO:

M's,

There's much said about what should be to clean up our household and industrial garbage, and what to do with our hazardous materials. While others are advocating "Not in my back yard" and others advocating disposal and distruction without air or water pollution. But regardless of how we deside to dispose of our waste, it must be remembered that any system designed to do the job must go someplace.

Most of those involved in waste management either seem to be spending much of their time looking at limited systems or alocating funds towards a short term solution only, because mostly due to the immediate political presures. Others order systems with limited capabilities, or authorize measures that are limited in solving the overall problem they are faced with, such as what happened to the Springfellow site. Many of which prove later to be more costly than effective, but where all give little or no return to the community which pay for them.

We at C.G. BOYD & ASSOCIATES, with our small staff with over 100 years of combined experience in waste management, do not claim to have all the solutions to every environmental problem, nor will we ever solve all the worlds environmental problems, but we do believe with this kind of experience we are unlike most waste management consulting firms you fine today, we have available the data and experteese to not only examine your needs but to put in place permanent high tech systems that will not only do what you want, but do it with zero pollution to the air and zero contamination to the ground water.

Why this letter. Because we want to introduce and make available to you, your staff and all the communities in southern California the most advance fully INTEGRATED TREATMENT FACILITY available.

A system designed from proven systems the world over. System designed for zero pollution and where landfilling is never a required solution for our garbage waste. Where household, industrial and other hazardous wastes material are totally processed or destroyed without emmiting air contaminets or having to place residue into the soil. Where all types of waste products are handle at one full service operation, whether it be non-hazardous or hazardous classified, the first time, where duplication is eliminated and where your waste problems will not reappear 10 to 100 years later.

First, we will design a main system to meet the total needs of the community and the counties using it, with built in capabilities to expand with your needs, using only the vary latest proven technologies in waste disposal and processing, and a couple of ideas of our own. A system that is 90% self-contained, recycles up to 65% of all types of waste received, a system that gives back to the community through good service, low cost energy, and a portion of the profits derived from recycled products.

Second, 21 transfer stations or pick-up points, each self-contained and self supporting, each non-polluting, located through-out Riverside, San Bernardino Counties and some parts of Los Angeles and Orange Counties. So that the need for added disposal trucks can be reduced, and so that no community disposal truck will travel more than 10 mile to and from each pick-up point. Where all non-hazardous and hazardous transporters will never be required to travel over our streets and highways more than 20 miles. Where any long distance hauling will become something of the past and where landfills no longer be a requirement for our waste.

We need 30 minutes to present this most unusal plan to you and those you represent. So that we can show how its possible in this age to dispose and process all types of waste with zero pollution to the air or water. And of-sourse - we will need time to answer a few questions.

So before you buy or authorize a new system, before you throw more dollars into a landfill, give us a call at (213)583-4961 or leave a message on the recorder at (714) 681-2954 we will be happy to present our proven plan at your convience.

Sincerely,

C G Boyd

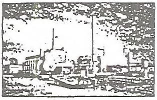
CHARLES G BOYD
SR. CONSULTANT

Don't Bury Your Problems
BURN THEM

More efficient equipment quells some of the fiery opposition to incineration

Incineration may soon be the method of choice for municipal and industrial waste disposal. When that will happen is difficult to predict. But it's already apparent the growing scarcity of land, the potential hazards of groundwater contamination, prohibitive costs and stringent governments will severely restrict landfills as a viable, long-term option for hazardous waste disposal.

Whether using kilns, drums or fluidized beds, incineration is still politically controversial and one of the more expensive disposal methods. But it has become the only technically and environmentally sound method for many types of waste products.



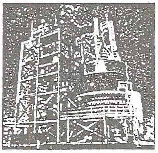
The rotary kiln incinerator can handle the widest range of waste — liquids, solids, sludges, as well as containerized and drummed waste. In fact, rotary kilns are often used by operators of off-site, toll incinerators because of their versatility. Appropriate for large-volume applications, the rotary kiln also tends to be one of the more expensive of incinerator technologies.

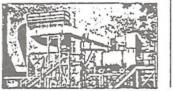
C-E Raymond, a subsidiary of Combustion Engineering, Inc. (Chicago, Ill.), recently expanded its kiln offerings to include slagging as well as non-slagging rotary kilns. The difference between these technologies, according to C-E Raymond, is not so much the hardware but the way it is operated. Varying the temperature and/or composition of the waste will determine whether a rotary-kiln incinerator generates primarily molten slag or solid ash.

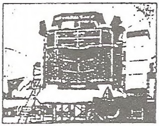
Non-slagging kilns usually operate at about 1,800°F, whereas slagging kilns require temperatures as high as 2,200°F. This higher temperature allows a slagging kiln to handle an entire drum. The drum is merely perforated and then fed into the kiln; the high temperature softens the drum, releasing its contents. Molten slag leaving the kiln is then quenched in water to form a non-leaching glass-like material.

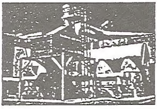
The high temperature in a slagging kiln can improve destruction of the waste, but it also shortens the life of the refractory by as much as several thousand hours. Replacement of the refractory is often the primary maintenance expense of a slagging kiln. As with many type of incinerators, the gas leaving rotary kilns often passes through a secondary combustion chamber to meet federal requirements for temperature and residence time.

The versatility of rotary-kiln technology is being demonstrated by Roy F. Weston Co. (West Chester, Pa). The company has built a mobile rotary-kiln incinerator that is being readied to clean up 7,500 tons of polychlorinated biphenyl-contaminated soil at a Superfund site.









Clockwise from top: Keeler fluidized-bed incinerator, C-E system, Huntington regenerative-fume unit, Reeco equipment and McGill facility

Also a manufacturer ofrotary-kiln incinerators for large users, McGill Environmental Systems, Inc. (Tulsa, Okla.), a subsidiary of International Technology Corporation, has developed an incineration technology specific for smaller waste generators. Designed to destroy wastes stored in drums, its modular Drummed Waste Disposal System can accommodate 1 to 4 drums per day; by adding modules, it can incinerate up to 16 drums per day. The drums may contain almost anything — solids, liquids, sludges or slurryies.

A batch operation, the system subjects two drums to intense heat in a refractory-lined furnace to vaporize the waste. Incineration of the vapors is then completed in a secondary combustion chamber. A lance assures that all contents of each drum are vaporized. What's more, the single-module drum incinerator is about one-third the price of a small rotary kiln.

FLUID BEDS AND BOILERS

The thermal fluid bed can incinerate a wide range of industrial liquids, sludges, and solid wastes. Filled with an inert, fluidizable material such as sand, a fluid bed offers good mixing and near-isothermal operation. Bed temperature can be controlled by the temperature of the fluidizing air or with heat transfer coils in the bed itself.

A fluid-bed incinerator usually has lower operating and maintenance costs than a rotary kiln, but can't handle large chunks of waste or waste that will melt and disturb fluidization. Because the large mass of material heats or cools slowly, fluctuations in feed composition cause little change in bed temperature. The refractory is not continually subjected to thermal shock.

The thermal fluid bed also lends itself to intermittent operation. Because the reactions of combustion and water evaporation are virtually instantaneous, there is a very low inventory of fuel or feed anywhere in the system, permitting startups and shutdowns in a matter of minutes when the combustor is near operating temperature. Makers of fluid-bed incinerators as well as boilers, Keeler/Dorr Oliver (Williamsport, Pa.) specializes in products that offer reduced energy consumption. Its systems can be designed to preheat incoming combustion air, reducing or eliminating the need for auxiliary fuel. System can also be designed to offer energy recovery through the use of in-bed heat recovery tubes.

Another boiler manufacturer, the Cleaver-Brooks Div. of Aqua Chem, Inc. (Milwaukee, Wis.), also combines its boiler experience with incineration technology. Using a rotary kiln linked to a heat recovery boiler, its waste-incinerator systems often have steam production as the primary project objective.

When the waste is limited to liquid or gas, less complex options are available. T-Thermal, Inc. (Conshohocken, Pa.) produces liquid incinerators geared specifically to the chemical process industries. The company has handled myriad liquid and gas wastes, including chloro- and fluorohydrocarbons and dioxins.

At the heart of T-Thermal's incinerator is a vortex burner. Unlike conventional burners, it achieves high-intensity, high heat release with a short flame length. Combustion is achieved primarily in the combustion chamber before it gets to the flame. The vortex burner operates in a small chamber and can be fired by multiple fuels. The burner has also been used in rotary kilns for incinerating polychlorinated biphenyls and other chlorinated phenolics.

Historically, fume incinerators were costly in terms of energy consumption since they had to heat a lot of air just to burn a small amount of solvent vapors. Regenerative fume incinerators, however, are now available that meet stringent governmental air-quality regulations and they offer the added advantage of high thermal efficiency.

An early entrant into the regenerative fume incinerator market, Regenerative Environmental Equipment Co. (REECO), headquartered in Morris Plains, N.J., uses multiple energy-recovery chambers packed with inert material to recover heat from the incinerator's exhaust to preheat the incoming fume-laden air.

REECO is able to achieve up to 95% thermal efficiency when handling solvent-contaminated air at 3% of its lowest emission level; incineration can be sustained by the pilot.

To clean the regenerator packing of organic buildup, a bake-out cycle can be used. To remove inorganic contamination, the packing is removed and "vacuum-cleaned."

Using ceramic saddles as packing for the regenerators, fume incinerators from Huntington Energy Systems, Inc. (Union, N.J.) require no external fuel if the solvent concentration is above 25% lowest emission level. These devices also use a single speed-reducer valving system to reduce maintenance of the only moving parts in the fume incinerator.

Incinerator manufacturers seem to have few exclusive technologies. But each does have specific experience and they believe that is what is most important to their customers. Also, incinerator manufacturers favor specifications based on performance, not features. "If you need 99.99% or 99.9999% removal," says one, "that's what the manufacturer needs to know . . . not all the design features you think you may need."

For more information on products and services covered in this section, circle the number at the end of each item, on the reader service card

C-E Raymond, Combustion Engineering, Inc., Chicago, Ill. (525)
Cleaver-Brooks Div., Aqua-Chem, Inc., Milwaukee, Wis. (526)
Huntington Energy Systems, Inc., Union, N.J. (527)
Keeler Dorr-Oliver, Stamford, Conn. (528)
McGill Environmental Systems, Inc., Tulsa, Okla. (529)
Regenerative Environmental Equipment Co., Morris Plains, N.J. (530)
Roy F. Weston Co., West Chester, Pa. (531)
T-Thermal, Inc., Conshohocken, Pa. (532)

Looking to purchase incineration equipment? Check the manufacturers in the Chemical Engineering Equipment Buyers' Guide.

The Point Is...

No. 121, September 23, 1988

A SUMMARY OF PUBLIC ISSUES IMPORTANT TO THE DOW CHEMICAL COMPANY

There is a Solution to the Garbage Glut

Every day the typical American throws out more than four pounds of newspapers, ketchup bottles, soup cans, old clothing, etc., into a plastic trash bag for the garbage collector to haul away. After this garbage heads for the dump, it no longer concerns most people.

However, when that four pounds a day is added to the garbage being thrown out by all Americans, it becomes part of the 150 million ton mountain of municipal solid waste generated annually in the United States. In cities where waste managers are struggling to find some place to put this endless accumulation of trash, it then creates a garbage crisis. Waste disposal in many highly populated areas of the United States is a significant problem because current solid waste management practices haven't kept pace with population growth, the proliferation of consumer goods and environmental awareness.

As part of our commitment to protecting the environment, our products must satisfy both functional and disposal requirements.

Dow is concerned about solid waste because we are a leading manufacturer of materials used to produce packaging and durable goods. Since all products eventually end up in the waste stream, we are part of the solid waste challenge. As part of our commitment to protecting the environment, our products must satisfy both functional and disposal requirements. Further, our product stewardship philosophy includes ensuring that our products are used and disposed of properly. We are committed to being an active participant in developing and implementing solid waste solutions.

We are committed to being an active participant in developing and implementing solid waste solutions.

Today, about 80 percent of the United States' waste goes into landfills, but existing landfill capacity is limited and many are closing because they have failed to protect the surrounding environment. The number of landfills in the country has been cut from 18,000 to 6,000 since 1979. Half of the remaining ones are projected to close in the next five years.

Siting new landfills is next to impossible because nobody wants trash deposited near his or her neighborhood. Given a simple choice, most people opt to have their waste dumped somewhere far away — out of sight and out of mind.

However, putting the problem out of sight won't solve the crisis of what we're going to do with our garbage when landfills close. Instead, it requires rational and urgently applied decisions. Based on the experience of Dow and other industry members in handling

➡

manufacturing-generated waste, implementing a comprehensive, integrated solid waste management plan instead of depending only on landfills for disposal is necessary to beat the garbage crisis.

In our manufacturing operations, we use a multi-faceted approach to waste management. Waste is lost product. To protect the environment, conserve resources and improve profitability, we attempt to reuse or recycle potential wastes as raw materials to produce more products. Wastes that cannot be used or recycled are destroyed in an environmentally safe manner. Incineration is our preferred method of destruction, with ash and noncombustibles placed in secure landfills.

The disposal of *municipal* solid waste should be similarly addressed. A successful program would involve finding ways to reduce waste and including an appropriate balance of modern disposal methods. Where feasible, we should recycle materials that can be efficiently and economically recycled, incinerate the bulk of our trash to recover the energy, and use state-of-the-art secure landfills for incinerator ash and noncombustibles. Each disposal method, by itself, offers advantages and disadvantages. When appropriately applied in response to local needs, they present a safe and effective way to handle waste.

Continuing to landfill our garbage can create environmental problems because of the potentially noxious gases and harmful liquids that decomposing materials produce. Recently, the U.S. Environmental Protection Agency announced proposed rules that would require all the United States' municipal landfills to install monitoring equipment to protect the surrounding air and groundwater environment. The EPA predicts that the new rules will require changes at nearly all city landfills and encourage other forms of waste disposal.

Implementing alternatives to landfill use will help preserve the environment and make better use of the United States' resources. For example, waste-to-energy incineration has been used for years to handle municipal solid waste in technologically sophisticated countries such as Japan, Switzerland and Sweden. They're turning their waste problem into a solution for energy needs.

Handling the trash problem poses a challenge that all Americans can pitch-in to solve . . .

Communities in Oregon, California and New Jersey already separate their trash for recycling. As it becomes more expensive to pay for our trash to be hauled away, this waste disposal option will continue to grow in popularity and be accepted as a necessary way of life. Handling the trash problem poses a challenge that all Americans can pitch-in to solve through participation in efforts such as recycling.

Solid waste has become a problem because our most popular method of disposal — the standard landfill — has become a difficult option. However, we don't have to limit ourselves to this practice.

The point is . . . workable, practical solutions can be found. The technology for solving our solid waste disposal problem already exists and has been implemented in other countries and in a few U.S. communities. Now, consumers, manufacturers, special interest groups and government representatives nationwide must tackle the solid waste management issue on its various levels, consider the alternatives, and then seek efficient implementation.

W.Q D, PRA.

RIVERSIDE COUNTY
PLANNING DEPARTMENT

RECEIVED
SEP 07 1989
RIVERSIDE COUNTY
PLANNING DEPARTMENT

RIVERSIDE COUNTY PLANNING DEPARTMENT
EAGLE MOUNTAIN SPECIFIC PLAN
SCOPING MEETINGS

Written Comment Form

August 30, 1989

Lake Tamarisk Recreation Center Clubhouse
26-251 Parkview Drive
Desert Center, CA. 92239

Name: Trigg & Dorothy Rourke, Senior Center Coordinators

Address: Desert Center, CA 92239

Phone Number: (619) 227 3137

*Please note that all scoping comments must be received by the County Planning Department by September 18, 1989.

9/5/89

Comments:

1. 9 million, 100 thousand acre ft. of water is under the proposed dump. ½ acre ft. is used by a Calif. family during 1 year. When the water is ruined by the toxic wastes of the garbage, there is NO FIX.

2. History confirms that every garbage dump of household waste has polluted the ground water as though it was from toxic waste dumps.

3. Hydrologist engineers employed by Water Quality Control of Palm Desert have said, "Pollution will come to this aquifer if this folly of a dump persists."

4. MWD aqueduct to LA will be in constant jeopardy of like contamination from seepage, flash floods, human error & earth quakes.

5. A ditch around the garbage site will not ~~dter~~ deter a flash flood.

6. There was a lake & palm trees growing at the bottom of proposed pit. If, after years, the water has dropped, it may be because the water table has dropped at this time. Many farmers have had to drill deeper for their wells. It will return!

7. Garbage separation at home level is imperative for recycling. U. S. is behind other countries. ie Japan recyles 90% of its paper. US, 10%

[redacted]

(OVER)

, Our municipal waste totals 180 million tons a year. Most of it is recyclable.

8. MWD Director of Resources, Richard Atwater, states that the geology of this Mountain area will allow water to infiltrate quickly through the bottom & hence into the aquifer below.

[illegible]

[illegible] "[illegible] Team"

[illegible]

[illegible]

2) The BLM State Office Legal Section has advised me to write to you in regard to having my papers placed in your office mailing list for [illegible] documents, [illegible] easement, withdrawal applications, [illegible] drafts etc. in regard to the [illegible] at this moment.

3) ~~I would also like to receive a copy of the proposed wilderness designations that are to be forwarded to Congress, but only those within the Indio and El Centro Resource Areas. As a [illegible] believe in the multiple use methodology as set forth in the Desert Plan and also believe that the public lands administered by and through the BLM [illegible] left that way and not placed in the hands of the [illegible] of the [illegible] of the [illegible] [illegible].~~

Thanking you in advance for your cooperation, I am

Sincerely,

[illegible]

P.O. [illegible]

[illegible]

[illegible] California

EAGLE MOUNTAIN LANDFILL EIR/EIS

BUREAU OF LAND MANAGEMENT/COUNTY OF RIVERSIDE SCOPING MEETINGS

WRITTEN COMMENT FORM

December 6, 1989
7:00 p.m.
Lake Tamarisk Recreation Center
26251 Parkview Drive
Desert Center, CA 92239
(619) 227-3203

If anyone wishes to respond in writing relative to determining the scope of the environmental document for the Eagle Mountain Landfill project, they are encouraged to do so.

Name: R. J. REISTROFFER

Address: P.O. Box #652-
DESERT CENTER, CA
92239

Phone Number: 227-3503

RECEIVED
DEC 20 PM 2:1

Please note that all scoping comments must be received by the Bureau of Land Management by December 20, 1989. Address comments to:

Marianne Wetzel
Bureau of Land Management
Palm Springs-South Coast Resource Area
400 South Farrell Drive, Suite B-205
Palm Springs, CA 92262

12-15-89

Comments: WE DID ATTEND THE FARCICAL HEARING & ARE NOW CONVINCED THAT IT & ANY SUBSEQUENT PERFORMANCES WOULD BE BETTER CLASSIFIED AS WAKES FOR A DEAD HORSE. THE AROMATICS OF COLLUSION REPEATEDLY INDICATED THAT THE STAGED PROCESS HAS LONG BEEN TOWARDS A ROTTEN PRE-DETEMINED GOAL.

FACTUALLY, YOUR DELIVERY LACKED THE FORCE TO ORALLY REGISTER ON ANY OF THE MANY CONCERNED ELDERLY EARS BEYOND THE FIRST ROW OF CHAIRS.

YOUR PROGRAM-PARTNERS WERE LOUDER, BUT WERE INCONSEQUENTIAL. THOUGH APPARENTLY PAYROLLED BY DIFFERENT UNIDENTIFIED ALPHABET ORGANIZATIONS THE TWO PRINCIPALS SEEMED TO HAVE A PRE-ARRANGED PLAN TO INTERRUPT (ALTERNATELY) EVERY RECOGNIZED FLOOR SPEAKER. OF PARTICULAR CONCERN TO ME WAS THE ARBITRARY MANNER IN WHICH THEY JOINTLY POOH-POOHED THE VERY SERIOUS FACTOR OF IMPACT FROM THE LARIVER DUMP GULL, (SPLAT POLITICO) WITH THEIR PRATTLE RE RAVENS.

IF YOU CANNOT FIND BETTER MOUTHPIECES THAN YOU HAD AT DESERT CENTER EVEN YOUR PREPAID PROJECT IS IN BIG TROUBLE. WE WHO MUST AUGMENT OUR HEARING BY LIP-READING WER DEFEATED BY THE HAIRY MESS ON THE FACE OF ONE OF YOUR PERFORMERS. WE CERTAINLY DO NOT LOOK FORWARD TO TH SEEING, HEARING, SMELLING, ETC.... OF THE DIESEL TRANSPORTERS HAULING SOCAL FILTH UPGRADE TO THE AIDS STEWPOT.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

December 21, 1989

Marianne Wetzel
Bureau of Land Management
Palm Springs-South Coast Resource Area
400 S. Farrell Drive, Suite B-205
Palm Springs, CA 92262

Dear Ms. Wetzel:

The Environmental Protection Agency (EPA) has received the Notice of Intent to prepare an environmental impact report/statement (EIR/EIS) for a right-of-way and land exchange, as part of a proposed waste disposal facility at the Eagle Mountain Mine (BLM CA-25594). We understand from the Federal Register notice that the period for scoping comments will end December 20, 1989. Due to a work backlog exacerbated by displacement of EPA staff from their San Francisco office, which was damaged in the October earthquake, we cannot meet this scoping deadline. Thus we would like to request an extension of the scoping period until January 19, 1990.

Considering the magnitude of the project we feel that it is important that we provide your office with a thorough statement of the waste policy, regulatory, and environmental issues which EPA would like to see addressed in the EIR/EIS. In accordance with the National Environmental Policy Act and Section 309 of the Clean Air Act, the EPA Office of Federal Activities reviews all environmental impact statements issued by federal agencies; thus, it is in the best interests of both the BLM and EPA to clarify our concerns during the scoping phase.

We would appreciate a prompt response to our request for an extension of the scoping period and would also welcome any further information you can provide on the project and upcoming public meetings. All correspondence should continue to be sent to:

Environmental Protection Agency
Office of Federal Activities, E-3
215 Fremont Street
San Francisco, CA 94105

Most EPA staff are temporarily working in their homes until substitute office space can be arranged. If you have any questions about scoping comments or other review procedures, please contact Carolyn Yale, phone 415-658-0921.

Sincerely yours,

Carolyn Yale (for jw)

Jacqueline Wyland, Chief
Office of Federal Activities

United States Department of the Interior

BUREAU OF MINES

WESTERN FIELD OPERATIONS CENTER
EAST 360 3RD AVENUE
SPOKANE, WASHINGTON 99202-1413

December 18, 1989

Memorandum

To: Russell L. Kaldenberg, Area Manager, Palm Springs-South Coast Resource Area, Bureau of Land Management, Palm Springs, California

From: Geologist, Branch of Resource Evaluation

Subject: Proposed Right-of-Way and Land Exchange for Proposed Eagle Mountain Mine Waste Disposal Facility

The Eagle Mountain mining district has a total metal production of at least 215 million long tons of iron, 7,257 ounces of gold, 11,768 ounces of silver, 1.18 million pounds of lead, and 114,124 pounds of copper. More than 99.9 percent of this production came from Kaiser Steel Corporation's Eagle Mountain Mine. Although the mine officially closed in late 1982, the term "inactive" used in the Federal Register notice to describe the status of the mine is appropriate. According to the Engineering and Mining Journal International Directory of Mining (1985), the mine still contains 250 million tons of "proved reserves" and 100 million tons of "probable reserves," with a grade of 35 percent iron.

Availability of the mineral resources in the Eagle Mountain area is being restricted, piece by piece, by the Joshua Tree National Monument and the recent Joshua Tree National Park proposals. The proposed waste disposal facility is one more individual action which, by itself, appears justifiable. However, the cumulative effect of all these proposals on mineral resources is one of a major adverse impact.

We believe there is a very real possibility that sometime during the next 100 years (the proposed life span for the landfill) mineral resources at the Eagle Mountain Mine will again become economically viable. Therefore, the Bureau of Mines desires to participate as a cooperating agency for the Environmental Impact Report/Statement to ensure that all potential mineral resource related impacts caused by alternative actions are thoroughly addressed.

Please contact us if you have questions or information regarding cooperating agency status. Thank you for the opportunity to become involved in this issue.

Michael D. Dunn

Michael D. Dunn

Marianne Wetzel B.L.M. Jan. 20 1990

Palm Springs So. Coast Resource Area
400 South Farrell Drive, Suite B. 205
Palm Springs, Calif. 92262

RECEIVED
BUREAU OF LAND MANAGEMENT
1990 JAN 24 PM 1:39
P.S. ... AREA
PALM SPRINGS, CA.

Sirs or Madam,

I believe no one has any right to ruin any more, in California - or anywhere.

Look what they did at Stringfellow Pits!

they promised it would not contomenate the Water too!!

2000 tons of waste per day will contanenate the graund Water which feeds Desert Center and all of the Coachella Valley!

the water in Desert Center eats thru many pipes, etc.

a bed of Clay will not stop leakage of the poisons in the trash!

Why ruin a Smog Free area which Desert Center is.

with the trucks hauling the trash to the pits?

there are so few Smog Free areas in California lets protect the ones we have!!

Sincerely yours,

J. Agnes Carter

due to medical problem

I live at Scotts Valley now. but I have to go back to Desert Center!

My telephone # is
408-439-8472

Address - J. Agnes Carter
[illegible] Tree Villa # 208
100 Lockwood Lane
Scotts Valley, CA 95066

[illegible]
407
Deal

City of Palm Desert
73-510 FRED WARING DRIVE, PALM DESERT, CALIFORNIA 92260

TELEPHONE (619) 346-0611

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December 13, 1989

The Honorable Patricia (Corky) Larson
Supervisor, Fourth District
County of Riverside
46209 Oasis Street
Indio, California 92202

Dear Corky:

SUBJECT: EAGLE MOUNTAIN MINE PROPOSED LANDFILL

Our Environmental Conservation Manager attended the scoping meeting for the preparation of an EIR/EIS document on the proposed Eagle Mountain mine landfill. At this public meeting, the City of Palm Desert voiced opposition to any alternative which includes trucking solid waste to Eagle Mountain.

Mr. Mark Beizer, a representative of the applicant, M.R.C., indicated that the current project proposal includes a maximum of 4,000 tons per day, or 200 trucks per day, being transported by road. These 200 trucks can significantly impact Coachella Valley's air quality and our freeway's traffic demand.

In addition, the City of Palm Desert is opposed to diesel as the fuel source to transport solid waste by rail. The City of Palm Desert believes electricity should be a more environmentally sound alternate fuel. Palm Desert believes that the trading of one problem, solid waste, for another problem, air quality, in the Los Angeles Metropolitan area is not acceptable.

As mentioned earlier, the City of Palm Desert staff has voiced our concerns at the scoping meeting and will follow with a letter of comments to Bureau of Land Management for consideration.

Thank you for your attention to this matter.

Sincerely yours,

Buford A. Crites
Mayor

BAC/JW/rgf

cc: Marianne Wetzel, BLM
City Council
City Manager

Timothy Anderson
P.O. Box 497
Desert Center, Ca. 92239
December 16, 1989

Marianne Wetzel BLM
400 S. Farrell Dr. Ste B 205
Palm Springs, Ca. 92262

In Reference BLM CA-25594

Dear Marianne Wetzel,

I am a local farmer in the Desert Center area, and was unable to attend the recent December 6th citizen's scoping session, concerning the proposed landfill site at Eagle Mountain. I am greatly interested in the impact that this landfill could have on the local environment, and my livelihood as an organic farmer. My most alarming concerns are groundwater integrity and the proposed liner that MRC would use to safeguard groundwater. I am also concerned about the use of mined tailings in the cover-up process of the landfill. Could these tailings be composed of some toxic materials and could they leach into our local groundwater ?

I would greatly appreciate that the Environmental Impact Statement would address the concern of tailing use, tailing composure, and any examples of successful use as fill dirt for other landfills in the country. I also request that the Environmental Impact Statement thoroughly investigate the proposed liner, and the history of the successful use of this type of liner in other areas of the country. I feel that this proposed liner should be impregnable to alcohol solvents, and petroleum products such as thinners, cleaners, or paints. At one point MRC announced that the liner was one of new technology and composed of clay. I question the use of new technology in an untested procedure that could have devastating results to our local environment and groundwater. I also know that the history of the clay liners in creating an impregnable barrier against alcohol solvents and some petroleum products is very poor for landfills located in other areas of the country.

For these reasons, I request that the Environmental Impact Statement cites successful uses of this type of liner in other areas of the country. I very much hope that you will embrace these concerns with the same feelings that we, the people who live and work here , do. I make one last request in that I might obtain a copy of the Environmental Impact Report / Statement when it is complete and ready for public scrutiny. Thank you for your time.

Sincerely,

Timothy W Anderson

Timothy W. Anderson

DEC 20 PM 1:51

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Wildlife Society
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Mr. & Mrs. Williams
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Terry Wood
Mary E. Zeiler

APPENDIX B

PROJECT DESCRIPTION

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PROJECT DESCRIPTION

INTRODUCTION

This specific plan (No. 252) is for the Eagle Mountain Solid Waste Management Project, a regional waste-by-rail project to bring solid waste generated in Southern California to a landfill in Eastern Riverside County. As part of this project, the applicant proposes to reclaim a portion of the former Eagle Mountain open pit iron ore mine for the land disposal of nonhazardous municipal solid waste generated in Southern California and to provide retrievable storage of recyclables salvaged from municipal wastes.

Refuse delivered to the landfill will be processed through processing and transfer stations located as near as practicable to the sources of refuse generation in the metropolitan Southern California area. At these stations, refuse will be screened for unacceptable substances, sorted for recyclables, compacted, and loaded into intermodal shipping containers or conventional transfer trailers. Intermodal containers will be loaded either on rail cars for direct transport to the project site by rail, on trucks for transport to a rail head for subsequent transport to the project site by rail or for direct transport to the landfill by highway.

The proposed landfill will result in the reclamation of a portion of the former Eagle Mountain open pit iron ore mine. For site access, the project will utilize (1) Kaiser's 52-mile industrial railroad connecting the mine with the Southern Pacific main line at Ferrum Junction, California, and (2) Kaiser's 5-mile road, connecting the mine with Interstate 10 via the Eagle Mountain Road.

The project site will be designed for a maximum of 20,000 tons per day (tpd) of refuse (up to 16,000 tons per day by rail and up to 4,000 tpd by truck). The estimated capacity of the proposed landfill is in excess of 730,000,000 tons, and its minimum life is estimated to be approximately 115 years. The daily capacity of the proposed operation, 20,000 tpd, represents approximately one-fourth of the solid waste disposal needs of the Southern California area.

PROJECT OWNER AND OPERATOR

Mine Reclamation Corporation (MRC) has leased approximately 8,300 acres of the former Eagle Mountain mine and the 52-mile Kaiser railroad right-of-way from Kaiser Steel Resources, Inc. (Kaiser) for a period of 100 years. A major portion of this leasehold is being proposed for development as described herein. MRC also intends to operate the private rail line between Ferrum Junction and the landfill. The applicant may also develop and operate transfer stations in urban areas, or utilize existing or proposed transfer stations developed by other companies.

PROJECT LOCATION AND SIZE

The project site is a portion of the Eagle Mountain iron ore mine located in the Eagle Mountains in the desert area of eastern Riverside County (see Figure 1). The site is located approximately 10 miles north of Desert Center (see Figure 2), about 200 miles east of Los Angeles, and approximately 50 miles west of the Arizona border. The site occupies approximately 4,695 acres. The landfill itself will overlie about 2,272 acres.

The site is bordered on the north by the Pinto Basin, on the east by the Chuckwalla Valley, on the South by the Chuckwalla Mountains, and on the west by the Eagle Mountains. The northern boundary of the proposed landfill is approximately 8,000 feet from the Joshua Tree National Monument at its closest point. Site boundaries are shown in Figure 3.

The town of Eagle Mountain, built by the Kaiser Steel Corporation for the employees, is adjacent to the mine. The town is presently occupied by Kaiser office facilities, a low-security "return-to-custody" detention facility, and approximately 65 occupied dwelling units utilized by the employees of the detention facilities; an additional 25 units are scheduled to be leased by May 1, 1991. The nearest town is Lake Tamarisk, located approximately 8 miles

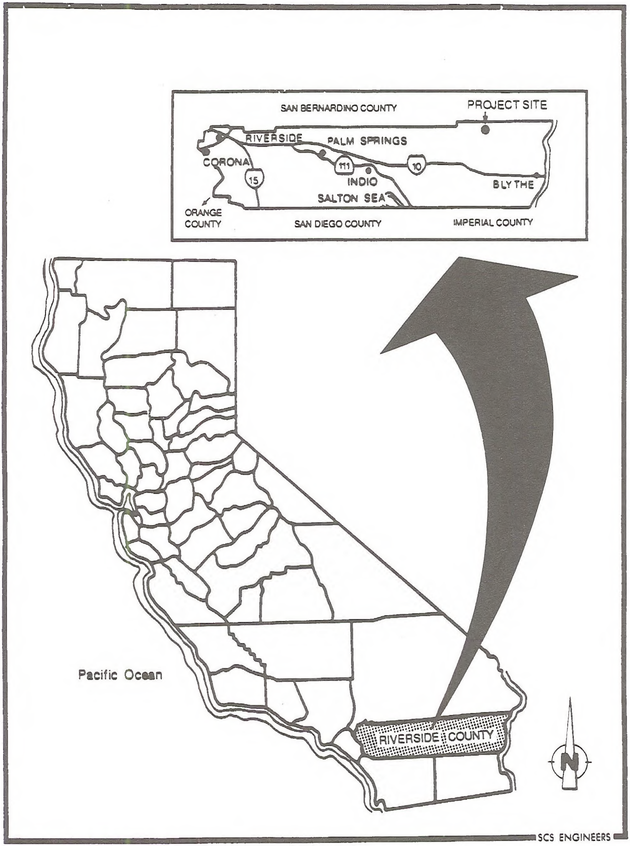


Figure 1. Location Map.

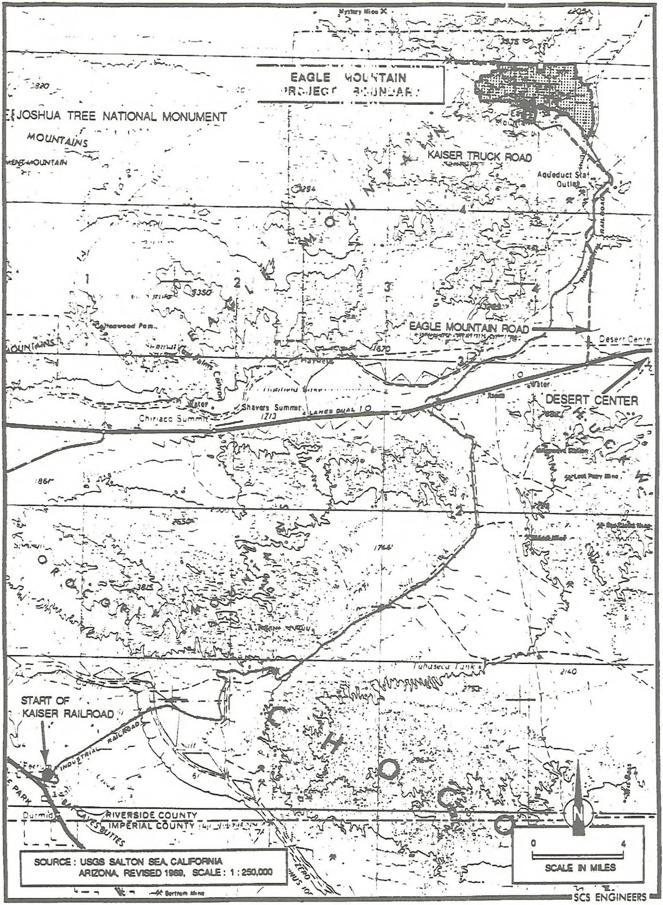
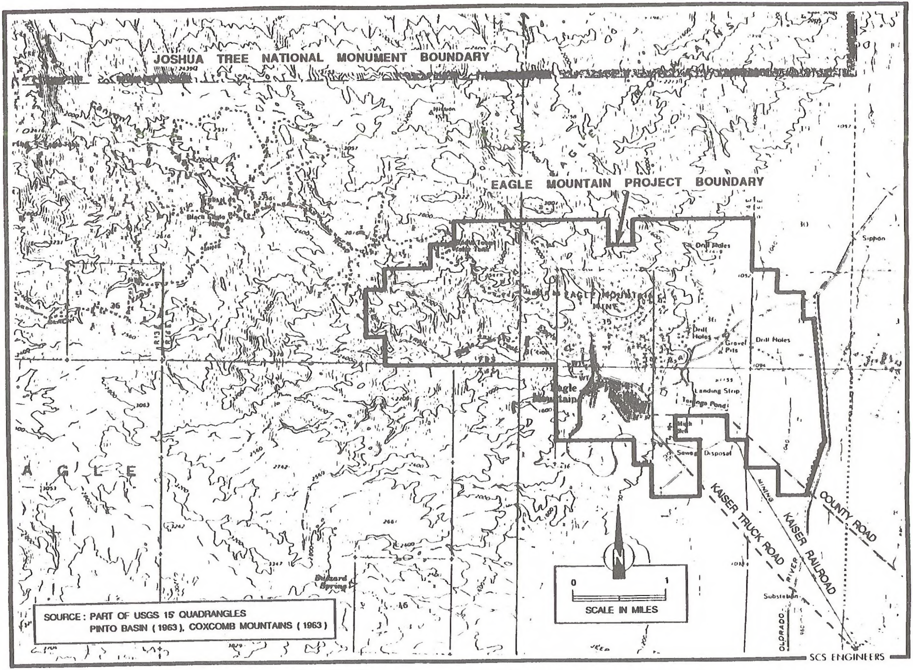


Figure 2. Area Map, Eagle Mountain Project, Riverside, California.



SOURCE: PART OF USGS 15' QUADRANGLES
PINTO BASIN (1963), COXCOMB MOUNTAINS (1963)

Figure 3. Eagle Mountain Project Boundary.

south of the mine and originally built by Kaiser Steel for mine management personnel.

PROJECT OBJECTIVES

The project is being implemented with the following objectives:

- To provide facilities to support the recycling and disposal of nonhazardous municipal solid waste generated throughout Southern California.
- In view of anticipated shortfalls in solid waste disposal capacity, to provide capacity adequate to accommodate a significant portion of anticipated future demand in Riverside, San Bernardino, Los Angeles, and Orange Counties.
- To make every effort to ensure that waste received at the landfill will first be processed through materials recovery facilities where hazardous materials will be removed and recyclable wastes will be recovered.
- To operate all facilities in accordance with applicable rules, regulatory requirements, and plans and policies of local, regional, state, and federal agencies.
- To operate the project in a manner which mitigates potential adverse environmental effects and minimizes impacts on adjacent and nearby land uses.
- To receive a fair financial return on the investment required to develop and operate the project.

PROJECT DESIGN COMPONENTS

Project Capacity and Waste Stream

Project phasing and sequencing is discussed in Section IV.B.5 of the specific plan. The estimated capacity of the project site (i.e., the East Pit area) is in excess of 730,000,000 tons. With a maximum inflow of 20,000 tons per day, this site has adequate capacity to accept refuse for more than 115 years. The market area served by the project includes Los Angeles, Orange, San Diego, Riverside, San Bernardino, Ventura, and Kern Counties. Eventually, the project may also accept waste generated in other locations (e.g., North San Diego County). Within this market area, the EIS/EIR assesses impacts related to what is considered the most likely scenario for waste management with waste generation by transport mode as shown in Table 1.

TABLE 1. WASTE GENERATION AND TRANSPORT MODE
(Tons Per Day)

Location	By Rail	By Truck
City of Los Angeles	5,000	0
San Gabriel Valley	7,000	0
San Bernardino County	2,000	2,000
North Orange County	2,000	0
Riverside County	0	2,000
Total	16,000	4,000

The project site will be designed to manage nonhazardous solid waste from residential and commercial sources including single and multiple family residential units, office buildings, retail stores, wholesale businesses, manufacturing, and construction activities. Typically waste from these sources includes paper, plastic, food waste, metal, glass, fabric, and yard waste. It also includes non-water-soluble, nondecomposable inert solids such as concrete, rock and fill, and other construction and demolition materials. The applicant proposes to operate the landfill to accept all wastes eligible for disposal at Class III nonhazardous sanitary landfills.

The landfill will not accept the following substances:

- Liquid wastes.
- Hazardous wastes.
- Sewage sludge.
- Incineration ash.
- Radioactive wastes.
- Biological wastes.
- Infectious wastes.
- Other special solid wastes.

Project Phasing

Two types of phasing will occur in conjunction with the project. First, the use of container handling facilities will be phased as follows. The first phase will be designed to accommodate an inflow equivalent of up to one train per day (3,500 tpd refuse) and up to 50 trucks per day (1,250 tpd). In this phase of the project, waste will be received in a container handling area at the terminus of the existing Kaiser rail line, northwest of the town site. Waste received by rail will be delivered via the existing rail line from Ferrum Junction. During the initial phase, waste received by truck will access the site via the new truck road and an on-site haul road.

During Phase II, at an inflow of over 4,750 tpd, waste will be received via the new truck road used in Phase I and a new rail right-of-way which will run parallel to the new truck road. During this phase, waste will be off-loaded in newly constructed container handling facilities in the eastern portion of the project area and in the area northwest of the town site.

Waste Processing and Transfer Stations

The other type of landfill phasing is related to the sequence of landfill activities planned for the project site. Landfill sequencing is divided into four phases as described and shown in Section IV.B.5 of the specific plan.

Refuse delivered to the landfill site will first be passed through processing and transfer stations. The exact locations of these stations are not known at the present time; they will, however, be located as near as practicable to the sources of refuse production, and will have railroad access at the site or relatively nearby.

Processing and transfer stations will function as recycling, screening, and transfer facilities, Namely, incoming refuse will:

- Be screened for unacceptable wastes (hazardous and radioactive materials) which will be removed.
- Have recyclables recovered.
- Be compacted into containers and loaded for transport to the project site as follows:
    - Onto rail cars for direct transport by rail.
    - Onto trucks for transport to a rail head and subsequent loading for transport by rail.
    - Onto trucks for direct transport by highway.
    - Onto conventional transfer trailers for direct transport by highway.

The specific location, size, and number of the facilities needed for this purpose will be tailored to the needs of the area served, and is likely to include a mix of sites on or near rail lines. Existing waste transfer sites will be used wherever possible.

The primary purpose of the processing and transfer facilities, separate from their potential function as recycling centers, is to provide the project with specific control over the type and volume of waste disposed at the Eagle Mountain landfill.

Sorting, screening, and processing of wastes and recyclables will be performed within enclosed structures. Because the ownership and management of these facilities have not been determined, it is anticipated that a combination of mechanical and hand-sorting methods will be used to recover recyclables. It is intended that the waste will be sorted to remove metals, wood, cardboard, paper, glass, plastic, and yard waste. Loads of recyclables will be sorted in a separate area and accumulated with the materials recovered from the waste loads. The accumulated recyclables will be loaded into shipping containers for delivery to recyclers or, depending on market conditions, storage at Eagle Mountain. Nonrecoverable materials will be compacted and loaded into containers for transport to the disposal site.

Co-Location with Recycling Centers--

Depending on the location and ownership of the processing and transfer stations, it may be possible to use these stations as recycling centers, to designate one or more of these facilities as recycling centers, or to gradually add recycling functions after a site has been developed as a transfer station. Note that whether or not recovered materials are actually sold at these facilities (or elsewhere), recyclable goods will be removed from the waste to be disposed at Eagle Mountain.

Container Loading/Compaction--

The closed containers proposed for the transport of refuse to the project site by both rail and highway will have an approximate volume of 95 cubic yards (typically 40 feet in length, 8 feet in width, and 8 feet in height). These containers will be similar in appearance to the intermodal containers currently in use for shipping goods by ship, rail, and truck. The containers will be loaded in accordance with applicable weight limits for rail cars and highway vehicles. Accordingly, the containers will be loaded (charged) at the transfer stations with precompacted and weighed refuse to ensure that each container has a payload below the legal maximum weight.

Container loading at rail transfer stations will be accomplished with a stationary compactor which precompacts refuse into a receiving container where the refuse is weighed as it is being compacted. After the predetermined amount of refuse has been compacted, it will be hydraulically transferred to a receiving container for transport to the project site. The type of compactor to be used at this facilities can compact, weigh, and load 25 tons of refuse into receiving containers at 10-minute intervals.

Each rail transfer station will have a supply of containers which will exceed the number required for normal operations by at least 10 percent. This excess supply will provide container storage for waste awaiting transport, and will allow container loading to continue in the event that a train with empty containers is not received on schedule. Each rail car will have sufficient surge capacity to permit the loading of full containers and their temporary storage. Container loading at these transfer stations will utilize equipment similar to the equipment used to handle containers at the project site. This equipment will consist of rubber-tired container handlers and/or overhead cranes.

Waste Transport

At the maximum inflow, transport of municipal solid waste to the project site will be accomplished by both rail (up to 16,000 tons per day) and truck (up to 4,000 tons per day). Potential routes for rail haul of refuse to the project site are shown in Figure 4. Rail transport of containerized waste will accomplished by unit trains, which will be delivered to the switching yard at Ferrum Junction, California, over the existing Southern Pacific mainline, utilizing locomotive power provided by Southern Pacific. From the Ferrum Junction siding, unit trains will be moved to the landfill site over the existing private railroad line. From Ferrum Junction to the site, unit trains will be powered by MRC, Southern Pacific, or other privately owned locomotives. At maximum, six trains will be operated per day. Empty unit trains returned from the landfill will be picked up from the Ferrum Junction siding by Southern Pacific for return to the rail transfer stations.

Presently, Kaiser's rail line connects Ferrum Junction with Eagle Mountain mine. In conjunction with the project, a new rail spur will be built, taking off from the Kaiser Rail line at a point southeasterly of the existing landing strip and terminating in the container handling yard. The new spur will be

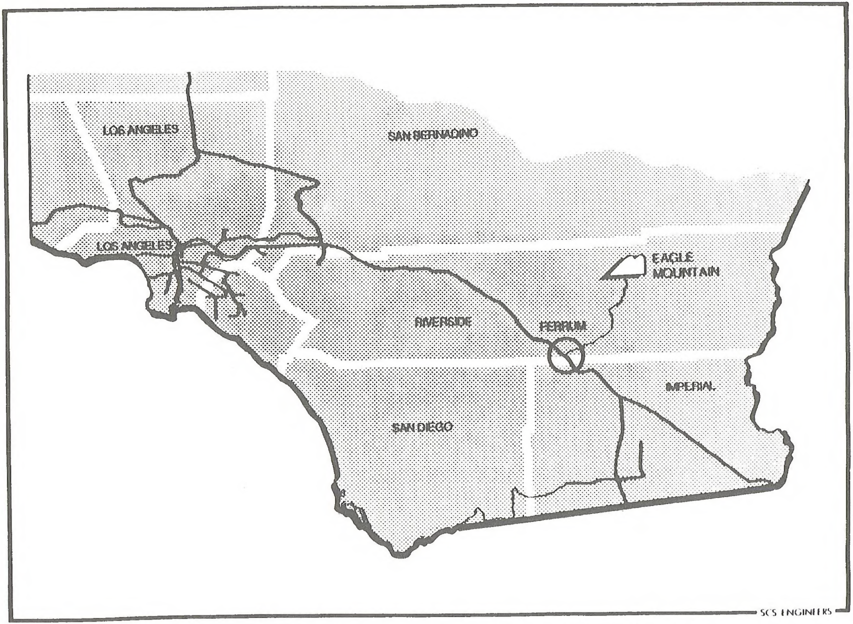


Figure 4. Potential Rail Haul Routes for the Eagle Mountain Project.

approximately 2 miles long and will carry rail traffic to the eastern portion of the project site and away from the town of Eagle Mountain.

Highway access will be provided via Interstate Highway 10, the Eagle Mountain Road (County Road R2), and the proposed Eagle Mountain Road Extension. Eagle Mountain Road runs north from its intersection with I-10 (approximately 2 miles west of Desert Center) to the Colorado River Aqueduct Eagle Mountain Pumping Plant. This road will be widened and improved to meet the design standards of the County of Riverside regarding drainage, culverts, paving material, thickness, etc.

For this project, the Eagle Mountain Raod Extension will be used to access the landfill from the northern terminus of the Eagle Mountain Road. The extension will begin from just south of the Metropolitan Water District Pumping Station along the alignment of the old Kaiser Truck Road and will continue in a northerly direction into the container handling facility at the eastern edge of the landfill. The location of the realigned rail spur and truck road are shown in Figure 5. The facility will also be constructed in accordance with County standards.

Unit Trains--

Unit trains will consist of one or more diesel locomotives carrying 14 articulating "twin stack" rail cars (see Figure 6). Each car will be approximately 256 feet long and will consist of five articulating units, each with a well-type configuration capable of holding two stacked 40-foot by 8-foot by 8-foot containers. Each car will carry 10 containers.

Each train will be less than 4,000 feet long and carry approximately 3,500 tons of refuse. This train length is somewhat shorter than most main line trains but approximately the same length as the Kaiser unit trains which used to carry ore from the Eagle Mountain mine. However, because of the relative density of refuse compared with ore, the weight of the refuse trains will be less than 35 percent of the weight of the Kaiser ore trains.

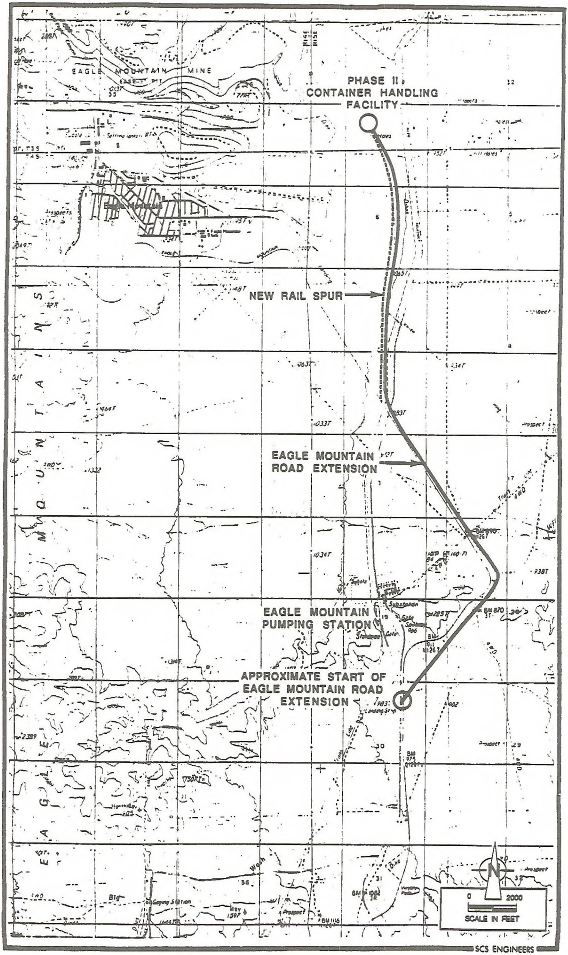


Figure 5. Preliminary Right-of-Way Alignment for Eagle Mountain Road Extension and Rail Spur.

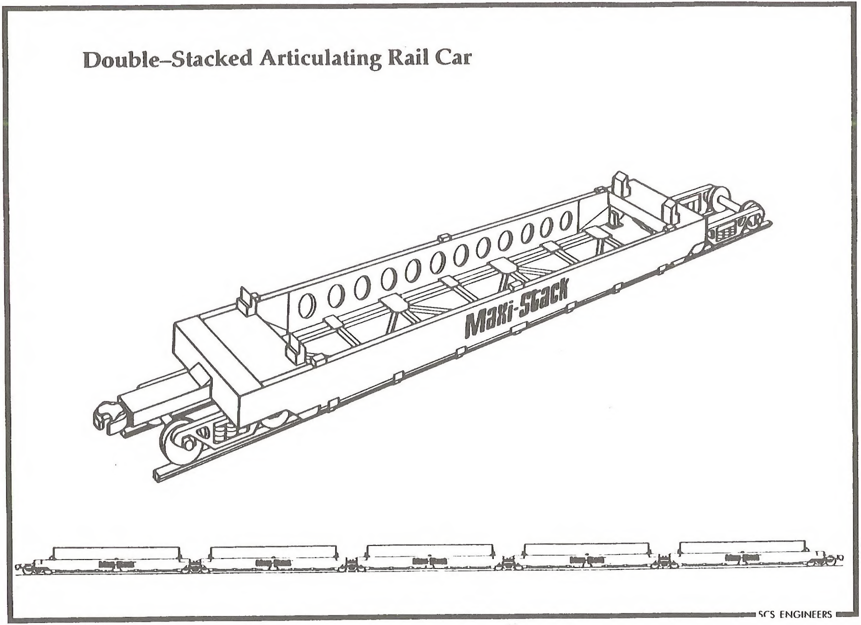


Figure 6. Double-Stacked Articulating Rail Car.

ALLOWABLE BRIDGE	80,000
TRACTOR WEIGHT	13,000
TRAILER WEIGHT	13,900
BOX WEIGHT	1,500
PAYLOAD	50,100

FRONT AXLE WEIGHT	12,000
TRUCK TANDEM WEIGHT	34,000
TRAILER TANDEM WEIGHT	34,000
GROSS WEIGHT	80,000

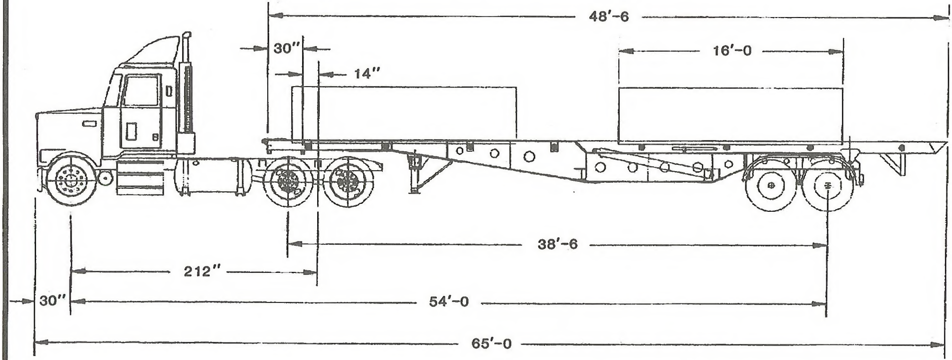


FIGURE 6a. CONTAINER HANDLING VEHICLE

Locomotive power from the loading stations to Ferrum Junction will be provided by the Southern Pacific Railroad (primary carrier). Initially, there will be five diesel electric locomotives available to power the trains between Ferrum Junction and the proposed landfill site. All locomotives will be equipped with diesel-powered engines generating approximately 3,000 HP. The locomotives will be reconditioned and upgraded to reduce emissions prior to the start of the project.

Trucks--

Two hundred daily two-way truck trips will be required to deliver the 4,000 tons per day of refuse by truck to the project site. If the loads were delivered at an even rate over 24 hours, seven loads would be delivered each hour. If the transfer vehicles were scheduled to arrive only during daylight hours, approximately 16 vehicles would arrive on an hourly basis. Although the placement of wastes in the landfill will be restricted to daylight hours, the container handling yard will be used to receive and store containers from trucks and unit trains on a 24-hour basis. Loaded intermodal containers will be off-loaded and empty containers on-loaded during evening hours. Waste delivered in conventional transfer trailers will be accepted during daylight hours.

For truck transport, refuse will be placed either in containers identical to those used for rail transport or in conventional highway transport vehicles. Containerized waste will be transported either by three-axle truck tractors and two-axle semitrailers which typically have the following characteristics: (1) diesel engines with a maximum rating of 350 HP, (2) a payload of approximately 25 tons, and (3) total loaded weight of less than 80,000 pounds.

These transfer vehicles will deliver containerized refuse directly to the container handling yard. Loaded containers will be replaced with empty containers for the return trip. Loaded transfer vehicles will generally be dispatched as they are loaded. However, they will not be dispatched during peak traffic hours.

Container Handling Yards

During the first phase of the project, the container handling yard will be located at the terminus of the existing Kaiser rail line. Up to one train per day will enter and exit using the existing track and siding. In this area, waste will be removed from rail cars with rubber-tired container handlers or mobile overhead cranes that will transfer the containers to trailers. The waste will then be transported by trailer to the working face of the landfill.

During the second phase of the project, both the initial container handling area and the larger container handling yard located approximately 0.5 mile from the eastern border of the landfill will be used. The area at the eastern border will contain the following:

- Railroad spur lines or sidings. Each siding will be long enough to allow an entire unit train to be spotted without uncoupling cars, and locomotives to couple and uncouple at either end of the unit trains.
- Equipment for moving containers between the unit trains and the container handling vehicles.
- Equipment for moving containers between the highway transport vehicles and container handling vehicles.

The final layout of the container handling yard for the second phase of the project has not been determined. Two possible configurations, which vary in terms of how containers are transported from the container handling yard to the working face of the landfill, are being evaluated.

With the first configuration, the railroad spur lines will be arranged in groups of two on approximately 62-foot centers. This will allow the loaders to (1) directly off-load containers from the rail cars and load them to container handling vehicles by moving in a direction which is basically at a right angle with the trains; and (2) off-load empty containers from the container handling vehicles and load the empty containers onto the rail cars in the same manner. In this configuration, empty containers will be unloaded from the container handling vehicle and onto a railroad car by one loader; full containers will be unloaded from the railroad car onto the vehicle by another loader.

With the second configuration, the tracks will be grouped as close as possible to each other in groups of two, three, or even four sets of tracks. The number of tracks in each grouping will be a function of size (reach) of a mobile overhead crane used to handle the containers. The clear distance between the railroad cars on adjoining groups of tracks will be approximately 60 feet.

Under either configuration, the length of the unloading area will be sufficient to accept an entire unit train which is approximately 3,700 feet in length. Additional space will be provided at each end to allow the locomotive(s) to uncouple from one train and then move to another spur in order to couple to cars on that track. Given these requirements, the length of the container handling yard will be approximately 4,000 feet.

Rail transport of an average of 16,000 tons of refuse per day could result in up to six trains per day. A minimum of six spur tracks are needed to accommodate this number of trains. To store additional unit trains for longer periods (e.g., for repair), eight spur tracks may be utilized on a daily basis.

Container handling yard operations will be conducted on a 24-hour basis. Lighting will be of the area type. All lights will be directed at the ground to minimize stray lighting. Light intensity will be adequate to allow normal operations to be conducted in a safe manner.

Internal Haul Roads

Both permanent and temporary haul roads will be constructed to transport containers from the container handling yard to the working face of the landfill.

The road from the container handling yard to the refuse fill area will be a permanent road. The road will divide approximately 1 mile from the container handling yard. One branch will extend along and ultimately cross the final fill face on the northern side of the refuse fill; the other branch will be located on the southern side of the fill. These permanent roads will end in temporary haul roads, which will continue to the working face of the landfill and other operating areas. Permanent haul roads will have a minimum improved width of 100 feet with an all-weather surface having a maximum adverse grade of 7 percent. Temporary haul roads will be well graded and hard-surfaced, with a maximum grade appropriate for the vehicles selected. These roads will be extended as final grades are reached.

Road surfacing will consist of either asphalt or compacted and graded rock. Dust will be controlled by regular watering of all traveled roadways which are not paved with asphalt. If the use of dust retardants is necessary to control dust on unpaved roads and within operating areas of the landfill, such action will be subject to approval by the Riverside County Department of Health.

Landfill Design Features

Proposed Sequence of Landfill Operations--

Landfill operations are proposed in four general phases:

1. Landfill operations will be initiated in the southwest portion of Planning Area 1 to an elevation of 1,950 feet MSL. After a series of drainage improvements have been made, landfill activities will be initiated in the westernmost portion of the East Pit.

2. During the second phase, landfilling will continue from the west end of the East Pit to the west end of the landfill to final elevations.

3. During the third phase, the northeastern portion of the landfill will be filled to its final elevation.

4. Finally, the eastern portion of the East Pit will be constructed to its final elevation.

This fill sequence is shown in a series of figures in the Phasing section (IV-8 through IV-11) of this Specific Plan. This fill sequence could enable mining of known iron ore reserves to occur in the eastern portion of the East Pit simultaneously with landfill operations. Since mining operations for this area have not been defined, the environmental impacts of this operation will be assessed in subsequent environmental documents before these operations are initiated.

The phasing plan also limits the disposal of refuse over the deepest depression in the pit to the last phase of the project. Because of uncertainties regarding the presence of ground water in this location, landfill development will not be initiated in this area until it is determined whether ground water is present and/or mitigation measures are necessary to ensure that landfill operations in this portion of the site can proceed without adversely affecting ground water quality. For example, filling this portion of the pit to create a substantial separation between landfill operations and the historic high ground water elevation is proposed by the applicant as a mitigation measure that may be necessary if tests indicate that ground water is present.

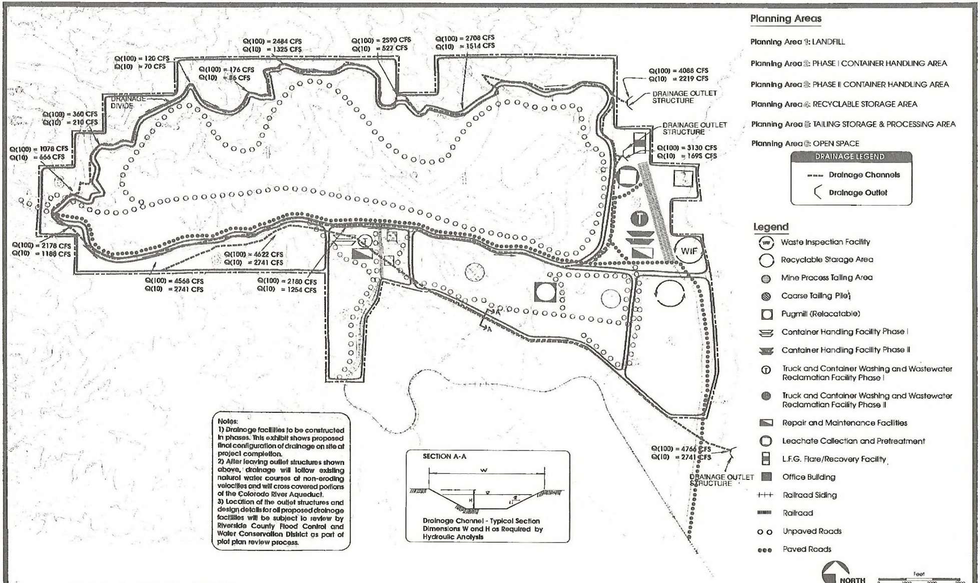
As shown in Figure 7, the landfill will reach a peak elevation of 2,700 feet above sea level, after settlement, in the western portion of the disposal area. Figure 7 shows the proposed final contours of the landfill, after settlement, throughout the project area.

Leachate Control and Removal System

Leachate is liquid (e.g., rainfall) that passes through or comes into contact with wastes, or is produced by the decomposition of solid wastes. The system to be used to collect and control leachate at the project site consists of the liner, ground water monitoring wells, and leachate collection, storage, and treatment facilities.

Liner--

The liner is the element of the landfill's leachate control and removal system that serves to direct leachate to the leachate collectors described below.


Planning Areas
Planning Area 1: LANDFILL
Planning Area 2: PHASE I CONTAINER HANDLING AREA
Planning Area 3: PHASE II CONTAINER HANDLING AREA
Planning Area 4: RECYCLABLE STORAGE AREA
Planning Area 5: TAILING STORAGE & PROCESSING AREA
Planning Area 6: OPEN SPACE
DRAINAGE LEGEND
Drainage Channels
Drainage Outlet
Legend
Waste Inspection Facility
Recyclable Storage Area
Mine Process Tailing Area
Coarse Tailing Pile
Pugmill (Relocatable)
Container Handling Facility Phase I
Container Handling Facility Phase II
Truck and Container Washing and Wastewater Reclamation Facility Phase I
Truck and Container Washing and Wastewater Reclamation Facility Phase II
Repair and Maintenance Facilities
Leachate Collection and Pretreatment
L.F.G. Flare/Recovery Facility
Office Building
Railroad Siding
Railroad
Unpaved Roads
Paved Roads
WIF
Q(100) = 120 CFS
Q(10) = 70 CFS
Q(100) = 2484 CFS
Q(10) = 1325 CFS
Q(100) = 176 CFS
Q(10) = 86 CFS
Q(100) = 2590 CFS
Q(10) = 527 CFS
Q(100) = 2708 CFS
Q(10) = 1514 CFS
Q(100) = 4088 CFS
Q(10) = 2219 CFS
DRAINAGE OUTLET STRUCTURE
DRAINAGE OUTLET STRUCTURE
Q(100) = 3130 CFS
Q(10) = 1695 CFS
DRAINAGE DIVIDE
Q(100) = 360 CFS
Q(10) = 210 CFS
Q(100) = 1078 CFS
Q(10) = 666 CFS
Q(100) = 2178 CFS
Q(10) = 1188 CFS
Q(100) = 4622 CFS
Q(10) = 2741 CFS
Q(100) = 4568 CFS
Q(10) = 2741 CFS
Q(100) = 2180 CFS
Q(10) = 1254 CFS
A
A
Q(100) = 4766 CFS
Q(10) = 2741 CFS
DRAINAGE OUTLET STRUCTURE
SECTION A-A
W
H
2
1
Drainage Channel - Typical Section
Dimensions W and H as Required by Hydraulic Analysis
NORTH
Feet
0
1000
2000
3000

Notes:
1) Drainage facilities to be constructed in phases. This exhibit shows proposed final configuration of drainage on site at project completion.
2) After leaving outlet structures shown above, drainage will follow existing natural water courses at non-eroding velocities and will cross covered portions of the Colorado River Aqueduct.
3) Location of the outlet structures and design details for all proposed drainage facilities will be subject to review by Riverside County Flood Control and Water Conservation District as part of plot plan review process.

FIGURE 7. DRAINAGE PLAN

SOURCE: THE PRA GROUP, INC., 1991

The entire area underlying refuse (floor and side slopes) will be lined using the large reserve of low-permeability clay-like material (fine tailing) from previous ore mining operations at the site and using a composite/synthetic liner where required to meet regulatory requirements. In accordance with State guidelines, the clay liner will be a minimum 1 foot thick with a permeability of less than 1×10^{6} centimeters per second, compacted to 90 percent maximum relative density.

Ground Water Monitoring Wells--

Baseline ground water monitoring conducted in accordance with the requirements of the Colorado River Regional Water Quality Control Board (RWQCB) was completed in March 1990. Monitoring consisted of four quarterly tests at four wells with analysis conducted for general minerals, organic carbon, total organic halides, chemical oxygen demand, ammonia, cyanide, nitrates, heavy metals, and volatile organic compounds. During and after landfill operations, ground water monitoring will continue at these and other wells. It is expected that the Waste Discharge Requirements (WDRs) of the RWQCB will contain modifications to the background water quality monitoring program.

Leachate Collection--

Two leachate collection systems will be used at the site. In the western and northeastern portions of the landfill area, any leachate generated will be directed by gravity over the top surface of the impermeable liner to a series of lateral pipelines located below the refuse. The laterals will connect to a series of trunk lines which will convey this liquid to an on-site wastewater pretreatment plant. Effluent from the pretreatment plant will be transported to the existing Kaiser wastewater treatment plant at the southeast corner of the town of Eagle Mountain. For the East Pit area, collectors will be placed on the bottom of the pit to convey leachate to collection sumps in low areas above the liner. From these sumps, potential leachate will be pumped to the surface and thence via trunk lines to the proposed pretreatment plant.

Leachate Treatment--

Two options are being considered for the treatment of leachate:

1. Leachate, if generated, will be pretreated on site using a package treatment plant designed to lower biological oxygen demand (BOD) and volatile organics to levels where the effluent can be treated at the existing Kaiser wastewater treatment facility. Depending on the volume pretreated at the package plant, the effluent will either be piped or trucked to the Kaiser treatment facility.

2. Alternatively, pretreatment facilities will be added at the existing Kaiser facility.

Drainage System--

The surface water drainage system will be designed with four objectives:

1. Convey storm water flows around and away from the refuse fill.
2. Collect and remove storm water that falls directly on the refuse fill.
3. Control off-site flow of waterborne debris.
4. Minimize erosion.

All on-site drains and drainage structures will be designed to accommodate a 100-year storm (i.e., a storm of such intensity that it is expected to occur only once in 100 years). All storm water flows will be released into existing and naturally occurring surface drainage channels. Channels used to convey storm water around the refuse fill will consist of lined and unlined channels, pipe, and open conduits.

The permanent drainage system for the diversion of storm water from the refuse fill area will be constructed in stages to protect areas of the refuse fill that have reached final elevations. Elements of the system to be constructed initially include a drainage system for the container handling area, permanent drains near the eastern extent of the the refuse disposal area and on-site settling basins, and a series of downdrains placed at 500-foot intervals. The temporary drainage system will consist of a series of intersecting channels and settling/detention basins of the refuse fill. These features will be replaced as the refuse operations continue to final elevations.

The drainage plan for the site will emphasize the use of perimeter drains and an improved system through the town. The southern toe of the landfill will be outside of and above the 100-year floodplain limits. Openings will be constructed at the two blocked sections of Eagle Creek: one at the mouth of the main confluence, and one at the creek neck just downstream of the main confluence.

The northern perimeter drain will be an unlined open trapezoidal channel which collects flows from the landfill surface and the northern canyons tributary to the landfill toe. The southern perimeter drain will also be an unlined open trapezoidal channel which will collect flows from the landfill surface only. Both drains will discharge east of the site through wing-walled energy-dissipating structures, which will reduce flow velocities to non-eroding conditions. When drainage exits the outlet structures, it will flow over covered portions of the Colorado River Aqueduct.

Flows from the major confluence on the southern side of the main haul road will follow the original drainage pattern in a southeasterly direction through the town. An improved conveyance system from the creek neck to the county/private road fork will collect runoff from the 100-year frequency storm. The major components of this system will consist of unlined open trapezoidal channels, culverts at the rail crossing and the county/private road fork, and a wing-walled energy-dissipating outlet structure. Flows will be discharged south of the road fork at a non-eroding velocity. When drainage flows from the outlet structures, it will also flow over covered portions of the Colorado River Aqueduct. The proposed configuration of drainage facilities is shown in Figure 7.

Storm water that falls directly on areas which have been filled with covered refuse, i.e., uncontaminated surface flows, will be collected in a series of surface drains and conveyed to one of the storm water drainage systems described above. Storm water which comes into contact with refuse will be considered leachate, and will be collected, pumped, and transported to the wastewater pretreatment plant.

Runoff from the container handling yard will be contained by berming this area. Flows will be conveyed through a gravity interceptor to natural watercourses east of the project site. Gravity flow through the interceptor will remove floating grease and oil and solids from the runoff. Liquid remaining in the pipe after the storm will be pumped and transported to the pretreatment plant.

Landfill Gas Surface Emission Control System--

The landfill gas (LFG) emission and migration control system will initially consist of a grid of horizontal collection pipes laid in trenches in the refuse. The horizontal collection system will be constructed as filling operations proceed, while vertical extraction wells will be constructed on the benches and the highest elevations of the landfill to control LFG emissions. The LFG collection system will be connected to headers, which in turn will be connected to the LFG emission control/utilization system.

The initial plan for LFG utilization will be combustion in a system of one or more devices approved by the South Coast Air Quality Management District (SCAQMD). A supplemental fuel-fired burner may be used when LFG concentrations are too low to utilize the flare system. When LFG production is economically feasible and/or necessary to keep air emissions below EPA's Prevention of Significant Deterioration (PSD) threshold levels, the applicant will convert the flare system to an energy recovery facility. At higher gas flow levels, the applicant will construct energy recovery facilities to maintain emissions below EPA's PSD threshold levels.

Construction of the initial flare station will begin within 1 to 2 years following the start of landfilling operations. (LFG generation in the first 2 years is expected to be insignificant.) Design specifications of the flares (stack height, diameter) are also unknown at the present time. In accordance with current SCAQMD guidelines, the flares are expected to operate at a minimum temperature of 1,400°F and a residence time of 0.3 second. Figure 8 shows a typical sectional view of the LFG emission and migration control system.

The LFG control system will also consist of a series of gas migration probes placed around the perimeter of the site to detect any off-site gas migration. Probe spacing and depth will conform with SCAQMD and California Integrated Waste Management Board (CIWMB) guidelines.

Condensate Collection and Treatment--

LFG condensate will be collected in traps placed at low points along the gas collection system. The traps will be enclosed in double-walled underground tanks. Pump-mounted trucks will periodically remove the condensate and carry it either to the wastewater pretreatment facility or to storage pending disposal off site at a licensed hazardous waste disposal facility.

Landfill Operations

Hours of Operation--

Landfill operations will be conducted during daylight hours only (approximately 10 to 14 hours per operating day depending on the season). Actual working hours will vary on a seasonal basis. The container handling yard will operate with three 8-hour shifts. This schedule will provide sufficient time for the loading and unloading of rail cars so that an average rail car turnaround time of 28 to 29 hours can be maintained. During periods when the landfill is not operating, loaded containers will be removed from rail cars and highway transfer vehicles and either placed on a truck chassis and held in the yard or stacked until landfill operations resume the next day.

Security--

Access will be controlled by use of a gate at the entrance to the site and the existing fence which separates the town of Eagle Mountain from the mine. Because the terrain is extremely rugged and vehicular access is limited

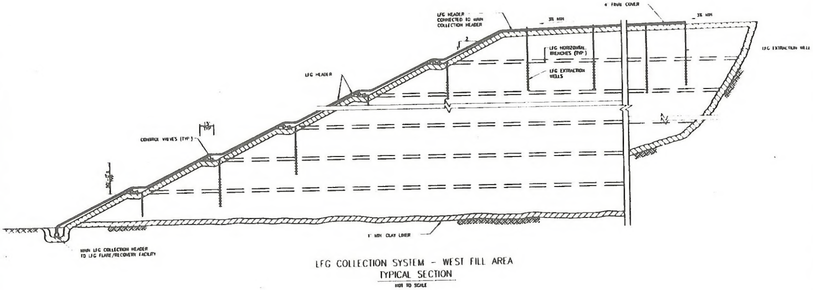

LFG HEADER CONNECTED TO MAIN COLLECTION HEADER
4' FINAL COVER
3% MIN
3% MIN
2
1
LFG HORIZONTAL TRENCHES (TYP.)
LFG EXTRACTION WELLS
LFG EXTRACTION WELL
LFG HEADER
CONTROL VALVES (TYP.)
1' MIN CLAY LINER
MAIN LFG COLLECTION HEADER TO LFG FLARE/RECOVERY FACILITY
LFG COLLECTION SYSTEM - WEST FILL AREA
TYPICAL SECTION
NOT TO SCALE
SCS ENGINEERS

Figure 8. Typical Section of LFG Collection System.

(except via the controlled access points), perimeter lighting and fencing are not proposed.

Dust Control--

Water from existing Kaiser water wells will be used, as needed, to control dust on the haul roads and within the operating areas (e.g., borrow areas) of the landfill. Although not proposed for use at the present time, the utilization of dust retardants on unpaved roads and within operating areas of the landfill will be subject to approval by the Riverside County Department of Health.

Container Handling Yard Operations--

Incoming trains will be routed to one of the sidings in the container handling yard. Locomotives will uncouple from the train and move to another siding to pick up a train loaded with empty containers. The additional sidings in the terminal will provide additional flexibility for the storage and marshalling of empty trains prior to transport back to Ferrum Junction.

After unit trains are positioned in the container handling yard, the containers with waste will be removed from the unit trains and placed on a chassis. The chassis will be hauled to the working face of the landfill where the containers will be emptied. The emptied containers will be returned to the container handling yard for reloading onto the unit trains. This yard will also include an area for loading/unloading containers from trucks. Loading and unloading of these containers will follow the same general procedures used for containers arriving by unit train.

Container Transport from Container Handling Yard to Working Face of the Landfill--

Containers loaded with refuse will be moved from unit trains or highway transport vehicles to the container handling vehicles in the container handling yard via large rubber-tired forklift vehicles or overhead cranes. Container handling vehicles will transport refuse-filled containers from the container handling yard to the working face of the landfill, and return the empty containers to the container handling yard for reloading on unit trains or trucks.

The proposed container handling vehicles will be two-axle semitrailers capable of carrying one container. These vehicles will be self-dumping (i.e., they will have a dumping platform added to the trailer configuration), operating in a manner similar to a roll-off truck. Hoist mechanisms will be hydraulically operated, with the hydraulic cylinder located on the trailer with the remainder of the hydraulic system located on the truck tractor and powered by the truck engine. The dumping platform will be designed to discharge refuse at the rear of the trailer.

All container handling vehicles will be designed to operate at a maximum speed of 50 miles per hour. This maximum speed, vehicle gearing, traffic pattern, and haul road design will enable these vehicles to maintain an average speed of 25 miles per hour (not including maneuvering time). The tractor will be powered with a 300-HP diesel engine.

Container Handling Process--

As described above, the loaded containers will be off-loaded from the trains and transfer vehicles and loaded onto the container handling vehicles using either large rubber-tired loaders or overhead cranes. A container can be loaded or unloaded from a container handling vehicle within 2 minutes (cycle time), using either of the handling methods described above.

In the early part of the second phase of the operation, the average one-way haul distance between the container handling yard and the working face will be 2 miles. Using the equipment described above, the average hauling time may range from 23 to 37 minutes. With operations limited to daylight hours, between 17 and 34 container handling vehicles will be used on a daily basis, with 3 or 4 additional vehicles available on site on a standby basis.

Operations at the Working Face of the Landfill

Operations at the working face of the landfill will include dumping refuse, bulldozing refuse at the working face, spreading and compacting the refuse, and application of daily cover at the end of each working day.

Refuse Dumping--

Conventional transfer trailers delivering waste to the facility will self-unload at the working face of the landfill. Refuse will be removed from shipping containers using self-dumping vehicles. Self-dumping vehicles will simply back up to the working face of the landfill and deposit refuse from the containers. These tippers will deposit the refuse from each container at the rear of the tipper near the refuse working face. After the refuse has been removed, the container handling vehicle will allow the elevated container(s) to return to their original position. Once the container is in its original position, the vehicle will leave the working face area and return to the container handling area.

Refuse Pushing, Spreading, and Compacting--

Containers will be emptied far enough to the rear of each vehicle so that a crawler tractor can remove each load of refuse from this area and push it to the working face before the next container is emptied. At the working face, crawler tractors will then spread the refuse to an average depth of 2 feet. Six crawler tractors will be required for the project.

After the crawler tractors have spread the refuse, the refuse will be compacted by diesel-powered landfill compactors. As final cell elevations are reached, crawler tractors will track-roll and level the refuse to minimize the requirements for daily cover. The compactors planned for use at the project site operate with a 315-HP diesel engine and have a width of almost 15 feet.

Landfill compactors for this operation will compact a minimum 2,000 tons of refuse per 10-hour day. Ten compactors will be in operation when the landfill is operating at maximum inflow.

Refuse placed, compacted, and covered each day comprises the working face (cell) of the landfill. Cell height, width, and length will be sized to minimize the required amount of daily cover. The working face will have a height of approximately 18 feet. The width will be sufficient to accommodate the self-dumping container handling vehicles selected for use at the project site. The front of the cell will have a slope of approximately 6:1 (horizontal:vertical); the side slopes will be approximately 3:1.

Each self-dumping container handling vehicle will require a width of approximately 18 feet at the working face. The use of these vehicles requires an 11-minute cycle time after which another vehicle will occupy this space. Self-dumping vehicles will deliver approximately 80 containers of refuse to the working face each hour. Assuming an 11-minute cycle time and by allowing the two outside vehicle dumping spots to be outside of the width of the working face, the required working face width will be 230 feet. Given this width, the cell will be advanced about 245 feet each working day.

Availability and Application of Daily, Intermediate, and Final Cover

The daily refuse cell will be prepared for placement of daily cover by leveling the surface (eliminating the high points and filling depressions) using crawler tractors. Following the leveling operation, crawler tractors will track-walk the refuse surface. A minimum of 6 inches of daily cover will be placed over the refuse by passing directly over the refuse, using either crawler tractors or self-propelled scrapers. Three additional crawler tractors will be required and may also be used to doze cover material from stockpiles located near the uncovered refuse.

Previous mining activities have generated large amounts of overburden rock or waste material (tailing) which will be used for daily and intermediate cover. This material is presently stored in several on-site areas located near and within the East Pit. Additional spoil areas located within and near the area proposed for landfill operations. The locations of spoil storage areas are shown in Figure 9.

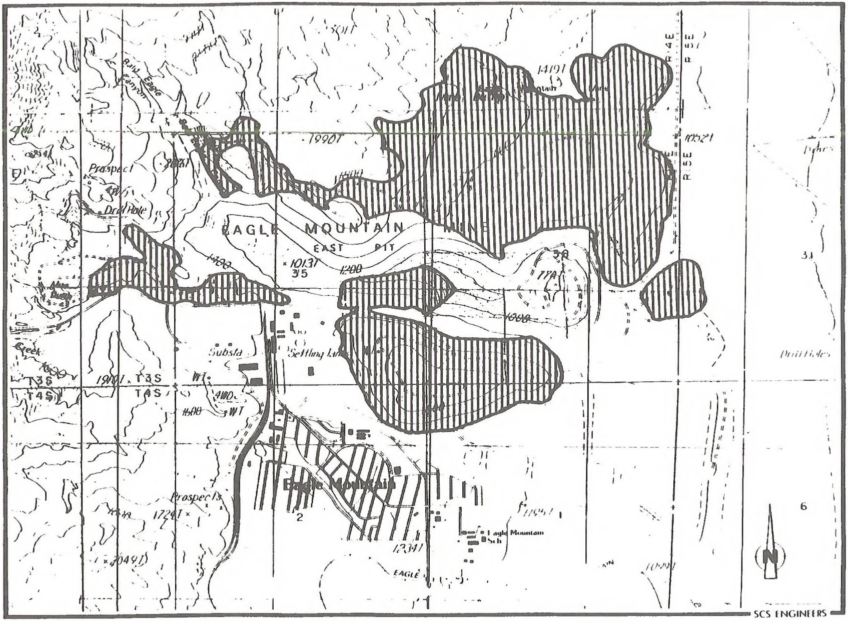


Figure 9. Spoils Area Locations.

Daily and intermediate cover requirements will average approximately 2,000 cubic yards per operating day. Other activities such as construction of temporary internal haul roads will increase the requirements for cover material to approximately 15 percent of the in-place volume occupied by the compacted refuse. Therefore, the total requirement for cover material will be approximately 4,000 cubic yards per operating day. Initially, cover material will be obtained from the tailing storage area located on the south wall of the East Pit. This storage area is estimated to contain more than 38,000,000 cubic yards. After this material in this location is exhausted, additional cover material will be obtained from other on-site overburden piles.

Upon completion of disposal activities, a minimum 4-foot-thick final cover will be applied to the landfill. To prevent ponding, the landfill crown will have a 3 percent minimum gradient in all directions. The cover will consist of three layers of soil, as follows:

- A 2-foot foundation layer (crushed rock) applied over the last lifts of refuse disposed at the facility.
- A minimum 1-foot-thick barrier layer with an effective permeability of 1×10^{-6} cm/sec, compacted to 90 percent relative density. The material for this layer will be the same as that used for the liner (e.g., mine process tailing).
- A vegetative layer will overlie the barrier layer. The vegetative layer will have a 1-foot minimum thickness, and will serve to protect the barrier layer, resist erosion, and support vegetative growth.

Closure--

Closure and closure planning will be completed in compliance with the requirements of the Local Enforcement Agency (Riverside County Health Department), the RWQCB, and the CIWMB. The closure plan prepared for the site will include provisions for continuing ground water monitoring, gas collection and control, site maintenance, landscaping, and grading. Existing CIWMB regulations require that the project applicant estimate closure costs, identify a method to finance these costs, and demonstrate the financial capacity to certify the availability of funds for 30 years after closure of the landfill.

Post-Closure Land Uses--

With a potential 115-year site life, the post-closure use of the site has not been planned at the current time. Settlement and the presence of gas collection facilities serve to limit the types of uses that can be developed after closure. Post-closure use of the landfill will be compatible with adjoining uses (e.g., Joshua Tree National Monument).

APPENDIX C

HYDROGEOLOGY AND WATER QUALITY
PROPOSED EAGLE MOUNTAIN LANDFILL
RIVERSIDE COUNTY, CALIFORNIA

Prepared by:

Kenneth H. Lister
California Registered Geologist #4338
SCS Engineers
3711 Long Beach Boulevard
Ninth Floor
Long Beach, California 90807
(213) 426-9544

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HYDROGEOLOGY/WATER QUALITY

- Affected Environment
  - Watershed Characteristics
    - Geologic Setting
    - Areal Drainage
    - Ground Water Basins
  - Local Hydrology and Hydrogeology
    - Hydrogeologic Setting
    - Surface Water and Springs
    - Discharge of Water During Mining Operations
    - Local Ground Water Basin
    - Water Wells in Project Vicinity
    - Ground Water Usage and Water Supply
    - Background Ground Water Quality Monitoring
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    - Occurrence and Movement of Ground Water
    - Ongoing Hydrogeological Work
- Environmental Impacts
  - Surface Water
  - Ground Water
    - Leachate Production
    - Potential Leachate Flow Paths
- Cumulative Impacts
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- Mitigation Measures
  - Measures Incorporated into Project Design
    - Ground Water Monitoring
    - Landfill Liner
    - Drainage Control
    - Leachate Collection System
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    - Phasing
- References

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1 Chuckwalla Valley and Pinto Valley Ground Water Basins

2 Northwestern Chuckwalla Valley

3 Trilinear Diagram, Ground Water and Process Water Quality

4 Well Logs, Kaiser Chuckwalla Valley Wells

5 Well Log, Eagle Mountain School Well

6 Northwest Chuckwalla Valley, Including Wells

7 Background Ground Water Quality Monitoring Points

8 Trilinear Diagrams of Ground Water Quality

9 Map Indicating Water Quality at Selected Points in the Northwestern Chuckwalla Valley

10 Contour Map Indicating Ground Water Flow Direction

11 Geology of the East Pit Area, Eagle Mountain

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4	Well Test Data, Kaiser Chuckwalla Wells
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8	Chemical Characteristics of Leachate

HYDROGEOLOGY/WATER QUALITY

This section discusses hydrogeologic and water quality conditions that may be affected by the proposed project. Specific issues involve the hydrogeologic regime of the site, the existence and movement of ground water, ongoing and future monitoring of water quality, and compliance with state regulations pertaining to discharges of wastes to land.

The first part of this section describes the hydrogeologic regime of the northwestern Chuckwalla Valley and surrounding areas, and includes sections on past site activities, wells and water usage, and current ground water monitoring activities. Following this are subsections on impact assessment and proposed mitigation measures.

AFFECTED ENVIRONMENT

Watershed Characteristics

Geologic Setting--

Geologic setting has been discussed in the section on Geology/Soils. As stated there, the Eagle Mountain site is located in the Colorado Desert physiographic province of California. The topography of this province is characterized by isolated, north-south trending mountain ranges separated by broad, flat, alluvium-filled valleys.

The proposed landfill site itself lies at the eastern edge of the Eagle Mountains. This mountain range has elevations ranging from about 1,200 to about 5,350 feet above mean sea level (MSL). This and other mountain ranges in the area surrounding the site (the Chuckwalla, Coxcomb, and Palen Mountains) are made up predominantly of Mesozoic granitic rocks which are intruded into a metamorphic complex consisting predominantly of Paleozoic metasediments. The metamorphic rocks consist of marble, quartzite, schist, and minor gneiss.

Together with minor amounts of Quaternary basaltic extrusive igneous rock, the granitic and metamorphic rocks make up the exposed consolidated rock in the area. Regionally the older bedrock is cut by numerous inactive northwest-southeast trending faults which dip nearly vertically. The fault planes exhibit narrow, slickensided, clay-bearing, and brecciated zones which may show extensive solutional activity (Dubois and Brummett, 1968). In addition, well-developed joint systems are present in the Mesozoic and older rocks. These are discussed in greater detail below (see Potential Leachate Flow Paths).

Lying stratigraphically above the Mesozoic and older rocks are Quaternary and possibly Tertiary alluvial and other sedimentary deposits of continental origin. These deposits, consisting predominantly of sand and gravel with minor amounts of silt and clay, fill the valleys and can reach considerable thickness. Drilling in the Chuckwalla Valley indicates that porous alluvial fill is at least 1,200 feet thick, extending 3 miles east of the front of the Eagle Mountains. Some of the Quaternary alluvial deposits exposed in the eastern wall of the mine pit are semiconsolidated due to deposition of calcium carbonate cement (caliche) in the spaces between clastic grains. Some Quaternary dune sand and lacustrine clay, silt, and sand are exposed in the central portions of the valleys. No evidence of faulting young enough to affect Quaternary deposits has been found in the proposed project area.

Areal Drainage--

A discussion of areal drainage appears in the section on Drainage. As described there, drainage within area basins is internal. Surface drainage is from the surrounding mountains into the Pinto and Chuckwalla Valley basins. In the immediate project area, drainage is from the Eagle Mountains easterly into the Chuckwalla Valley.

During and immediately after heavy rains, ephemeral streams are formed within the Eagle Mountains and surrounding valleys. Stream flow within the Pinto Valley, north of the proposed landfill site, is predominantly easterly. Some surface water may flow from the Pinto Basin into the northwestern arm of the Chuckwalla Valley, which adjoins the proposed landfill site to the east.

Drainage in the western part of the Chuckwalla Valley flows generally southeasterly towards Palen Dry Lake. Drainage from the eastern part of the Chuckwalla Valley is towards Ford Dry Lake. Stream flow within the project area is discussed in the section on Drainage.

Ground Water Basins--

Ground water basins in the area include the Pinto Valley basin, which lies about 4 miles north of the proposed landfill site, and the Chuckwalla Valley basin, which adjoins the site on the east (Figure 1). Aquifers in these basins consist principally of Quaternary alluvium. The mountain areas adjoining these basins are underlain principally by older igneous and metamorphic rocks of low matrix permeability and porosity. Basic hydrogeological data on these basins is summarized in Table 1.

Pinto Basin--The Pinto basin covers 310 square miles most of which is within Joshua Tree National Monument. This ground water basin is estimated to have a storage capacity of 230,000 acre-feet, and a usable capacity of 130,000 acre-feet (California Department of Water Resources, 1975). Ground water from this basin has only very limited uses at present. Kaiser Steel pumped between 2,300 and 3,900 acre-feet of water per year from two wells (Kaiser Pinto wells) during the years between 1962 and 1982. These currently inactive and unusable wells are located 1/2 mile northwest of the point at which the Pinto Valley joins the Chuckwalla Valley (Mann, 1967).

The most complete description of the hydrogeology of the Pinto basin to date is found in Kunkel (1963). Ground water flow in the basin is generally towards the eastern end of the valley; from there, it proceeds southward as underflow into the Chuckwalla Valley. Water level in the northernmost of the Kaiser Pinto wells (Well No. 3S/15E-4K) was measured at approximately 122 feet below ground surface (elevation 936 feet above mean sea level) on September 11, 1989.

The numbering system for this well (3S/15E-4K), as well as others mentioned in this document, is based on the location of the well. The numbers refer to the location of a well within the standard U.S. land survey grid. Location is

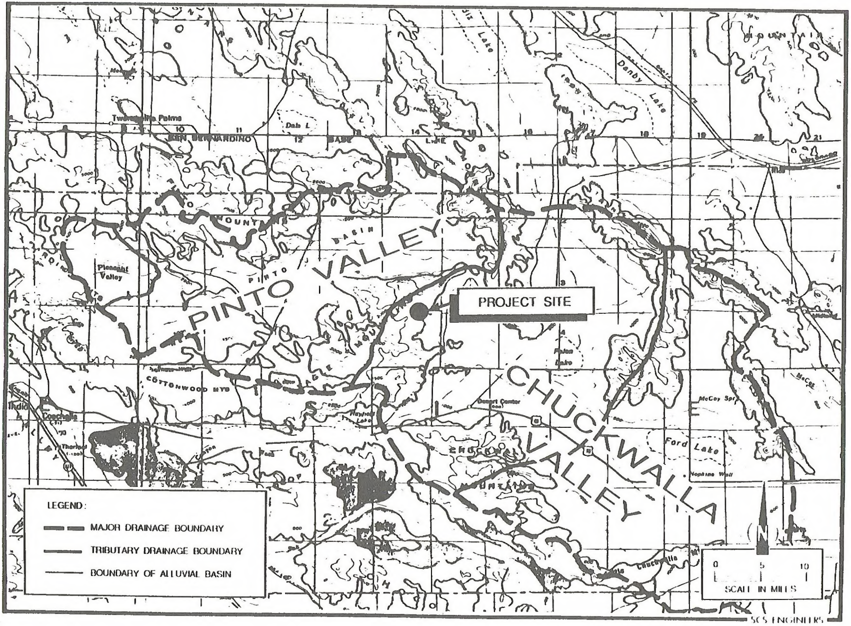


Figure 1. Chuckwalla Valley and Pinto Valley Ground Water Basins.

TABLE 1
SUMMARY OF HYDROGEOLOGICAL DATA ON LOCAL GROUNDWATER BASINS

Area of Basin (sq. mi.)	Depth to Groundwater (feet)	General Direction of Flow	Inflow to Basin	Underflow Out of Basin	Storage Capacity (acre-feet)
PINTO VALLEY BASIN					
310	20-450	East	Precipitation	Chuckwalla Valley	230,000
CHUCKWALLA VALLEY BASIN					
870	20-600	Southeast	Precipitation, Pinto Valley, Cadiz Valley, Orocopia Valley	Palo Verde Mesa	9,100,000

within township (3S), range (15E), section (4), and the sixteenth or 1/4-1/4 division of the section (designated 1/4-1/4 section K). This system is consistent with the well numbering system used by the State of California.

Water quality data from the Pinto Basin wells is summarized in Table 2; in general, this water can be characterized as having total dissolved solids (TDS) content averaging about 600 mg/l, and relatively high levels of sodium and sulfate. Sodium, bicarbonate, chloride, sulfate, and fluoride average about 200, 90, 100, 240, and 2 mg/l, respectively.

Chuckwalla Basin--The Chuckwalla Valley basin is an 870-square-mile basin with internal drainage. It consists of a broad, alluviated valley bounded on the south by the Orocopia, Chuckwalla, Little Chuckwalla, and Mule Mountains. It is bounded on the west by the Eagle Mountains, and on the east by the Mule and McCoy Mountains. Several northerly-trending mountain ranges (the Coxcomb, Granite, Palen, and Little Maria Mountains) bound the valley to the north, and extend southwards to partially divide the valley; the intervening valleys are contiguous with and tributary to the main part of Chuckwalla Valley (Giessner, 1963).

There are no perennial streams or any permanent natural bodies of water in the Chuckwalla Valley. During heavy rains, some precipitation runoff may flow to sinks at Palen and Ford Dry Lakes; standing water may occur at these lakes for a short time after heavy rains.

Subsurface flow into the Chuckwalla Valley is from three sources: the Pinto Valley to the northwest; the Hayfield basin to the west; and the Cadiz Valley to the north. Mann (1986) estimates inflows of 2,500 acre-feet of water per year from the Pinto basin; 1,700 acre-feet per year from the Hayfield basin; and an unknown amount from the Cadiz Valley. Ground water in the northwestern Chuckwalla Valley is replenished by ground water inflow from the Pinto basin, and by runoff from the slopes of the mountains surrounding the valley (Figure 2).

Except perhaps during very heavy storms, most of the rain falling directly on the valley floor is probably lost to evapotranspiration, and does not add

TABLE 2
PINTO BASIN WATER QUALITY DATA

Well	KS Pinto 1	Park Serv. 2	KS Pinto 1,9	KS Pinto 1,9
Well #	3S/15E-4K1	3S/15E-4J	3S/15E-4K1+ 3S/15E-4K2	3S/15E-4K1+ 3S/15E-4K2
Date	2/11/56	12/5/54	11/30/57	1/6/83
pH	8.2	8.1	7.7	8.3
Electrical conductance	1,010		1,020	990
TDS	618	571	598	610
Calcium	10	14	11	16
Magnesium	0.7	0.7	2	0
Sodium	280	199	200	196
Potassium	3.2		3.5	5
Iron		0		0.03
Bicarbonate	118	77	102	85
Carbonate	0	8	0	0
Sulfate	216	245	216	234
Chloride	102	97	104	82
Nitrate	18		22	15
Fluoride	2		2.5	
Hardness	28	38	36	

NOTE: Analyses in mg/l (parts per million) except for electrical conductance (micromhos) and pH.

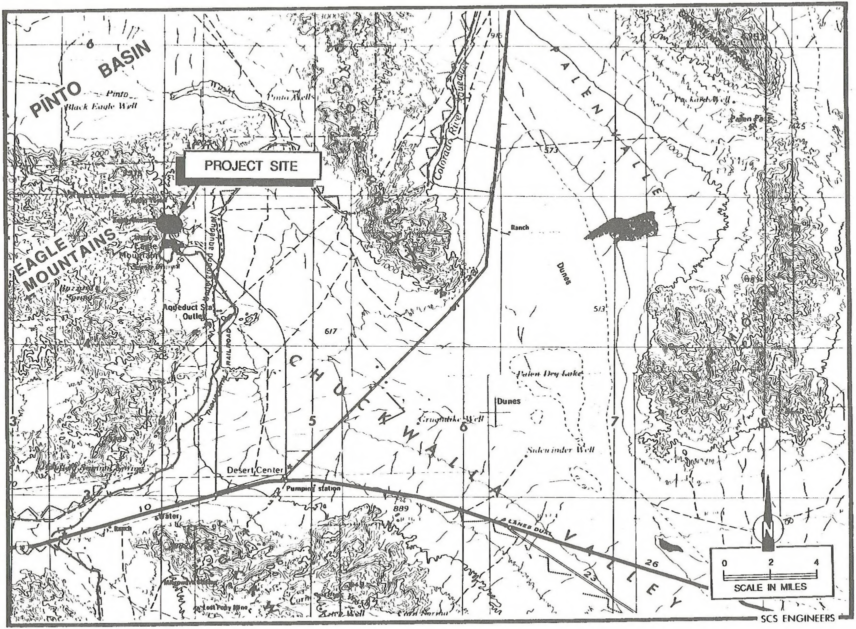


Figure 2. Northwestern Chuckwalla Valley.

materially to ground water recharge. This is due to the fact that the small amount of rainfall normally experienced evaporates rapidly in the arid climate, or is used by plants before deep percolation can occur.

Ground water flow in the Chuckwalla Valley is generally towards the east, with south-to-southwest flow in the northern arms of the valley. Depth to ground water measured from the surface varies from about 20 feet to over 300 feet. Ground water quality in the basin ranges from fairly good to poor, with TDS ranging from 274 to 12,300 mg/l (DWR, 1979). Koehler and Mallory (1981) state that the average TDS content of wells used in their study is 2,100 mg/l. Water quality is generally better than this average in the western parts of the valley, and becomes poorer in wells further east, particularly those near Ford Dry Lake. Fluoride content ranges from about 1 to about 12 mg/l, and is generally above federal drinking water standards; sulfate and sodium concentrations are relatively high as well. Additional information on ground water quality will be presented in succeeding sections of this report. Additional information on ground water flow rates is provided below in the subsection on the Occurrence and Movement of Ground Water.

Local Hydrology and Hydrogeology

Hydrogeologic Setting--

The hydrogeologic units in the Chuckwalla Valley area can be grouped into two broad categories: crystalline igneous and metamorphic rocks, and unconsolidated or semiconsolidated sedimentary deposits.

Crystalline rocks are described in more detail in the section on Geology and Soils. These rocks are generally considered to be non-water-bearing, since they does not normally yield usable quantities of water to wells. The matrix porosity of plutonic igneous and metamorphic rocks is very low. However, since much of the bedrock in the Eagle Mountains is fractured, it may be able to store water; moreover, the interconnectedness of fractures in the bedrock might provide pathways for the movement of ground water to wells.

Because water is readily available from the alluvial deposits in the northwestern Chuckwalla Valley, few attempts have been made to drill water production wells into the consolidated bedrock. One exception is the Eagle Mountain School Well (4S/14E-1M), which was drilled in late 1985, and completed in early 1986. In this well, alluvial deposits were encountered in approximately the upper 200 feet of the borehole, and bedrock was encountered below this depth down to 748 feet. The well was completed to produce water from fractured bedrock, with perforations at depths between 475 and 740 feet.

The unconsolidated and semiconsolidated sediments were deposited in a continental environment, mainly during Quaternary time; some of the sedimentary units penetrated by deep wells in the valley may be as old as late Tertiary. Most of the sediments were deposited in alluvial fan, stream channel, lake, or playa environments, though some were deposited as windblown sand. The majority of this material consists of alluvial sand and gravel, but some silts and clays were deposited as well, particularly in the central parts of the basin. Some of the alluvial material has been cemented by caliche.

In the northwestern Chuckwalla Valley, four Quaternary sedimentary units are encountered: alluvial fan deposits, younger alluvium, older alluvium, and windblown sand. These are described below.

The older alluvium is of Pleistocene age, and consists of fine to coarse sand interbedded with gravel, silt, and lesser amounts of clay. Recognizable clasts in near surface deposits are derived from the bedrock of the surrounding mountains. The color of the alluvium ranges from dark brown to red to grayish tan. Nodules and grain coatings of caliche are common. Surface exposures of the older alluvium are limited, but the unit is extensive in the subsurface where thickness ranges to over 300 feet. This unit yields water readily to wells, and is the most important aquifer in the area; however, lower permeability members within the older alluvium (such as debris flow deposits) may act as aquitards.

The fan deposits of Pleistocene age consist of poorly sorted boulders, gravel, coarse to fine sand, silt, and a minor amount of clay. This unit is found most typically at the margins of the valley, but fingers of alluvial fan deposits may extend in the subsurface almost to the center of the valley.

The fans are characterized by local areas of well-developed desert pavement on their surface. Color of the fan deposits ranges from brown to red to tan. The fan deposits are generally above the water table, and therefore do not form an important aquifer, although they are generally porous and permeable, and may form an important avenue for recharge of the ground water by runoff from the mountains.

The younger alluvium, of Holocene age, consists of gravel, sand, silt, and lesser amounts of clay. Color ranges from brown to tan. This unit is generally less than 25 feet in thickness, and is above the water table in most areas. The unit is, however, porous and permeable. It is most extensively developed in the central valley area.

A belt of windblown sand of Holocene age lies between the central axis of the valley of the northwestern Chuckwalla Valley and the Coxcomb Mountains. This deposit ranges in thickness up to 25 feet, and consists of medium- to fine-grained sand. This unit appears to be above the water table in all areas; however, similar units of Pleistocene age may exist in the subsurface, and could, in that case, yield water to wells.

Surface Water and Springs--

Surface drainage in the area of the project site is generally towards the east. Drainage within the central portion of the northwest Chuckwalla Valley is towards the southeast, in the direction of Palen Dry Lake. Drainage is more completely described in the section on Drainage.

There are no permanent, natural bodies of surface water in the Chuckwalla Valley. Surface drainage of precipitation follows heavy rains, but after the cessation of rainfall, surface water generally disappears in a short period of time because of percolation and evaporation.

No year-round springs have been reported in the northwestern Chuckwalla Valley. A number of springs having intermittent flow do, however, exist in the mountains which surround the northwestern Chuckwalla Valley; information on these is summarized on Table 3.

TABLE 3
INFORMATION ON SPRINGS
NORTHWEST CHUCKWALLA VALLEY

Name/Location*	Elevation (feet)	Dry/Flowing
Eagle Tank 3S/13E-23	2,040	
Buzzard 4S/14E-16	2,010	Dry (3/88)
Unnamed 4S/14E-16	2,400	
Hayfield Summit 5S/14E-19	1,900	
Long Tank 6S/15E-2	1,190	Flowing (6/61)

*Location: Township/Range-Section.

One prominent artificial surface water body exists in the vicinity of the project site. This is the Metropolitan Water District (MWD) Colorado River Aqueduct which, at its nearest point, lies approximately 1 mile east and 1/4 mile north of the northeastern edge of the East Pit. The MWD aqueduct is oriented approximately north-south in the area east of the project site, and water flow is from north to south. From about 1/4 mile north of the East Pit to the MWD Eagle Mountain Pumping Plant (which is located about 4 miles south of the project site), the aqueduct is covered.

Other surface water bodies within 10 miles of the proposed project site include a small industrial water-holding pond in the former Kaiser mill area (located about 2,500 feet south of the East Pit), holding ponds at the MWD Eagle Mountain pumping station (located about 4 miles south), and the artificial lakes at the Lake Tamarisk community (located about 9 miles southeast).

Discharge of Water During Mining Operations--

The proposed project location was formerly the site of iron mining, ore processing, and ancillary operations, which took place between 1943 and 1983. Some of these former operations resulted in the discharge of industrial water which had the potential for affecting ground water.

During mining operations at the Kaiser Eagle Mountain Iron Mine, wet waste rock (coarse tailing) was discharged from the ore processing plant onto a heap south of and adjacent to the East Pit. Large quantities of water were used to transport fine tailing (sand- to clay-sized particles) to the fine tailing basins located south of the East Pit.

The fine tailing basins cover a total area of approximately 540 acres. There are seven fine tailing basins, one of which (No. 7) never received tailing. Waste containment structures consist of berms or dikes constructed of alluvial material and crushed rock from mining operations. The berms are trapezoidal in cross section, and range up to about 80 feet in height. The inner surfaces of the berms and the floor of basin Nos. 4, 5, 6, and 7 were lined with compacted low-permeability fine tailing material; this material limited the amount of water which could percolate into the soil underlying the basins.

Based on measurements made during the early 1970's (Hawke Engineers, 1973), an average of about 2,600 acre-feet of water per year was discharged to the fine tailing basins. Normally, slightly over half of this water was pumped out of the basins and recycled to the process plant. An additional approximately 650 acre-feet were lost to evaporation, and perhaps 300 acre-feet remained in the interstices between sediment grains. The remaining approximately 300 acre-feet were lost from the system annually; much of this water may have percolated into the alluvial sediments below the tailing basins.

Coarse crushed tailing (less than 3/4 inch in diameter) were conveyed to the top of a heap which eventually covered approximately 120 acres, and contained a volume of tailing roughly estimated at 38,000,000 cubic yards. It is not possible to accurately estimate the amount of water which was codisposed with the coarse crushed tailing in this area, but it is estimated to be in the range of 2,500 to 7,000 acre-feet.

In addition to water discharged with the tailing during ore processing operations, water encountered during mining operations which seeped into the central portion of the East Pit was pumped from this part of the pit, and discharged into alluvium near the eastern end of the pit. A description of the circumstances surrounding water seepage into the East Pit is provided below.

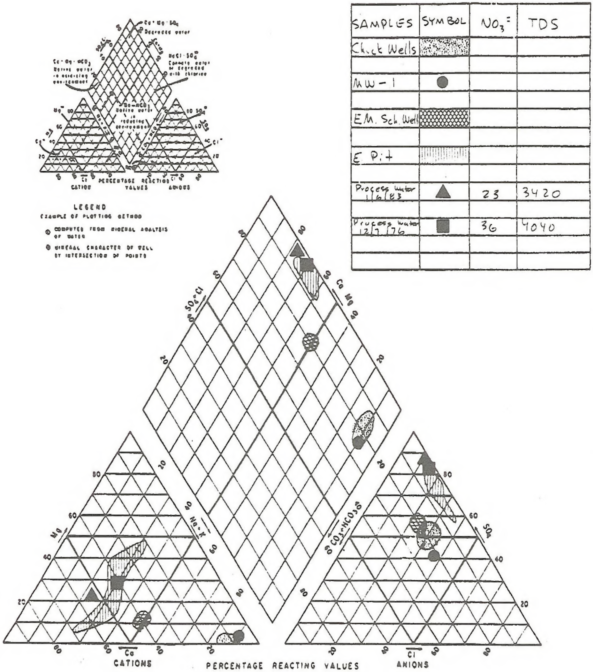
Based on recollections of Kaiser mine personnel, seepage of water into the central portion of the East Pit began in mid-1978, when mining operations at the 735-foot elevation encountered a near-vertical fracture zone. By early 1979, when the entire central portion of the pit had been excavated to the 735-foot level, wet areas had formed across the width of the pit. Subsequent blasting caused the wet areas to dry as the water infiltrated into the blast rubble.

By the first quarter of 1980, the pit bottom had been excavated to an elevation of 720 feet MSL. Water was flowing from several locations along the south wall of the pit. Water was pumped out of the central areas of the pit to a higher elevation in the eastern portion of the pit, where it was discharged onto the land surface and allowed to percolate into the alluvium. During the second quarter of 1980, an attempt was made to excavate to elevation 705 feet, but activity in this part of the pit had to be abandoned because water was interfering with operations, and Kaiser declined to procure the additional pumping equipment needed to remove the water. The water level in the pit subsequently rose to a maximum recorded elevation of 752 feet MSL in June of 1982. Since 1982, the water level in the East Pit pond has dropped. Current water level in the pond is at an elevation of approximately 709 feet.

The water source for this seepage may have been natural ground water, water from tailing stockpiles located just south of the East Pit, or ground water mounded up in this area due to local recharge from water codisposed with tailing. Chemical evidence suggestive of a similarity of the seepage water to mine process water may indicate some contribution to the seepage from process water which infiltrated the ground in areas of tailing disposal. Major ion composition of water from several sources in the Eagle Mountain area are plotted on a trilinear diagram on Figure 3. This diagram indicates a chemical similarity between East Pit pond water and mine process water. Water from a monitoring well (MW-3) located about 2,500 feet west of the pond also contains similar proportions of major ions.

The elevation of the water surface of the pond is currently approximately 710 feet MSL. This elevation is within 50 feet of that in all wells within a radius of 7,500 feet of the pond. During January and February 1990, water was pumped from the East Pit pond into a plastic membrane-lined holding basin. Approximately 40,000 gallons of water were pumped from the pond over a 10-day period. Pumping at rates of up to 100 gallons per minute resulted in lowering the pond water level up to 9 inches. After each episode of pumping, the water level was allowed to recover, and eventually reached approximately to its original elevation. Recharge rates of up to approximately 40 gallons per minute were measured. The fact that the pond water level recovered relatively rapidly after large quantities of water were pumped indicates the existence of substantial bank storage in the area.

Water samples were taken before and after pumping, and samples were chemically analyzed. TDS of the water decreased from 14,000 to 4,700 mg/l, for a reduction to about one third in dissolved solids. This confirms earlier evidence that water in the pond had become saltier through time, and the inference that



SAMPLES	SYMBOL	$NO_3^=$	TDS
Chick Wells	░		
MW-1	●		
E.M. Sch. Well	▩		
E. Pit	▥		
Process Water 1/6/83	▲	23	3420
Process water 12/7/76	■	36	4040

SCS ENGINEERS

Figure 3. Trilinear Diagram, Ground Water and Process Water Quality.

the pond had been acting as an evaporative sink. Because of the large quantity of precipitated salts which exist in the soil in the vicinity of the pond from earlier evaporation, it is likely that the 4,700 mg/l measured for the pond water after pumping is higher than that of water stored in the bedrock walls of the pond, and results in part from the dissolution of these precipitated salts.

Local Ground Water Basin--

The local ground water basin for this project is situated in the northwestern Chuckwalla Valley and adjacent upland areas. The principal aquifer in this area is the Pleistocene older alluvium, which consists of fine to coarse sand interbedded with gravel, silt, and lesser amounts of clay (Giessner, 1963). This unit is locally cemented with caliche. Well logs from the four Chuckwalla wells (4S/15E-10B, 4S/15E-2D, 4S/15E-2P, 4S/15E-11R) drilled by Kaiser Steel indicate that in this area (about 5 to 6 miles east-southeast of the project site), the sands and gravels of the older alluvium extend to a depth of about 300 to 450 feet below ground surface (Figure 4). Below this, the predominantly sandy section gives way to clay and shale.

Ground water has been produced from Chuckwalla Valley older alluvium at Kaiser Chuckwalla Well Nos. 1 through 4. Water from these wells has been used for industrial purposes at the Eagle Mountain Iron Mine, and is now being used for nondrinking domestic purposes at the town of Eagle Mountain. Pumping tests conducted at these wells following installation (1964 through 1977) indicate that the wells are capable of producing water at rates between 1,000 and 2,800 gallons per minute (see Table 4).

Based on pumping rates during these tests, water level drawdown, and well dimensions, the permeability (hydraulic conductivity) can be estimated (SCS Engineers, 1989c). Since Well No. 1 produces significant quantities of sand, the permeability estimated from this well's test data is probably less representative of aquifer permeability. Permeabilities at Well Nos. 2, 3, and 4 are estimated to be between 1.2×10^{-2} and 1.5×10^{-2} cm/sec. These values are somewhat lower than those estimated to occur in the Desert Center area (Koehler and Mallory, 1981).

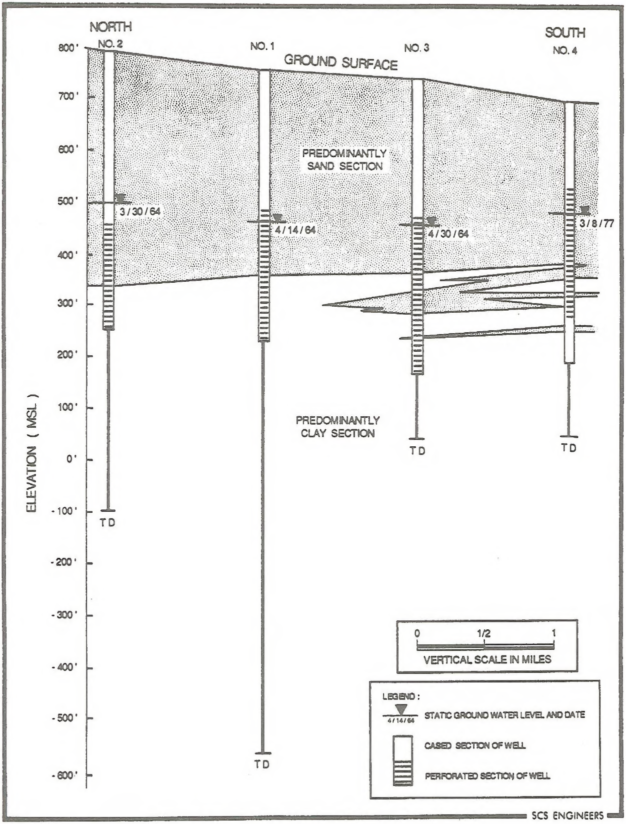


Figure 4. Well Logs, Kaiser Chuckwalla Valley Wells.

TABLE 4. WELL TEST DATA - KAISER CHUCKWALLA WELLS

Well No.	Pump Rate (gal/min)	Drawdown (feet)	Well Diameter (inches)	Well Length Screened (feet)	Aquifer Interval Screened (feet)	Estimated Permeability (cm/sec)
CW-1* 4S/15E-10B	1,000	75	16	241	121	6.2×10^{-3}
CW-2 4S/15E-2D	2,400	78	16	196	116	1.5×10^{-2}
CW-3 4S/15E-2P	2,800	78	16	289	169	1.3×10^{-2}
CW-4 4S/15E-11R	1,150	32	16	240	180	1.2×10^{-2}

* This well has a tendency to produce sand along with water; as a result, this permeability is probably not as good an estimate of aquifer permeability as the other wells.

Other geologic units within the northwestern Chuckwalla Valley are not important aquifers, because they are either predominantly above the water table or do not consist of sufficiently permeable materials (see subsection on Ground Water Basins, above).

The upland areas surrounding the valley are underlain principally by bedrock which consists of intrusive igneous and metamorphic rocks ranging in age from early Paleozoic to Cretaceous. Thin deposits of Quaternary alluvium are found in stream courses within the uplands as well. The alluvial deposits are generally above the water table, and therefore are not water-bearing. Portions of the bedrock contain ground water held in fractures in the rock.

Bedrock, even in areas where it contains water, has generally not been considered water-bearing in the past, since it was assumed that wells completed in bedrock would not yield sufficient quantities of water for most uses. It is now known from drilling of water wells in other areas of the state that even crystalline rocks (such as granites) can yield sufficient water to wells to provide a usable supply to one or a few residences, if the rocks are highly fractured and the fractures are interconnected. In addition, the completion of the Eagle Mountain School Well in the town of Eagle Mountain in 1986 demonstrated that some fractured bedrock in the project area can yield usable quantities of water to wells.

The Eagle Mountain School Well was drilled to a depth of 748 feet (Figure 5). This well is located about 2,000 feet south of the East Pit. Bedrock was encountered beginning at a depth of about 200 feet. The well was completed with the screened sections entirely within the bedrock portion of the hole at depths from 475 to 740 feet. Static water level was at an elevation of 779 feet MSL shortly after well completion in January 1985. This fractured bedrock section is capable of yielding water at a rate of 90 to 95 gallons per minute with the present 15-horsepower submersible pump. During testing after well construction, the well was pumped at a sustained rate of 75 gallons per minute for 24 hours; this resulted in a drawdown of 11 feet. Based on results of this pump test, permeability of the water-bearing section penetrated in this well has been calculated at 1.8 x 10-3 cm/sec (SCS Engineers, 1989).

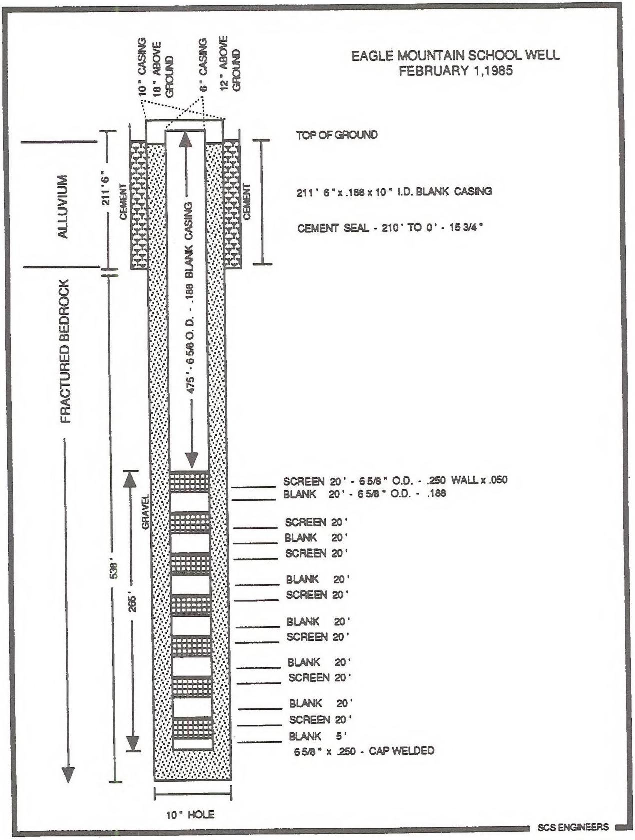


Figure 5. Well Log, Eagle Mountain School Well.

The water-bearing bedrock of this well is located beneath 200 feet of alluvium at the margin of the Chuckwalla Valley. Since the valley margin is where most ground water recharge due to runoff is thought to occur, this well may be optimally located for water production from bedrock. It is not known whether bedrock within the area of the Eagle Mountains without alluvial cover would yield usable quantities of water over time. In this situation, recharge probably occurs at a very low rate due to the fact that there is little or no overlying alluvium to hold water derived from precipitation. In addition, monitoring well MW-3, which was completed in bedrock in the western portion of the East Pit, is able to produce sufficient ground water for sampling. The school well (MW-2) and the East Pit pond indicate, however, that in some areas the bedrock is sufficiently fractured to provide ground water storage capacity and pathways for water to move.

Water Wells in Project Vicinity--

To determine the points at which ground water is withdrawn for use in the northwestern Chuckwalla Valley, and their distance from the project site, a canvass of well locations was performed. Locations of known water wells within 10 miles of the project site are shown on Figure 6. Descriptive information on these wells and wells now destroyed is presented in Table 5.

The nearest wells to the project site are the Eagle Mountain School Well discussed above and monitoring wells MW-1, MW-2, and MW-3. MW-1 (3S/14E-36H) is located about 2,000 feet east of the East Pit. MW-1 was drilled and completed during April and May of 1989, at the direction of Mine Reclamation Corporation (MRC). The purpose of this well is to provide one of four ground water monitoring points to determine background water quality in the vicinity of the project site. Quarterly water quality monitoring activities for the site are described in the subsection on Background Ground Water Quality Monitoring.

MW-1 was drilled to a total depth of 400 feet through alluvium consisting of fine to coarse sand, gravel, silt, and a minor amount of clay. The log prepared by geologists during site drilling is reproduced in this appendix. The well was cased with 5-inch-diameter Schedule 80 PVC to 385 feet, with the

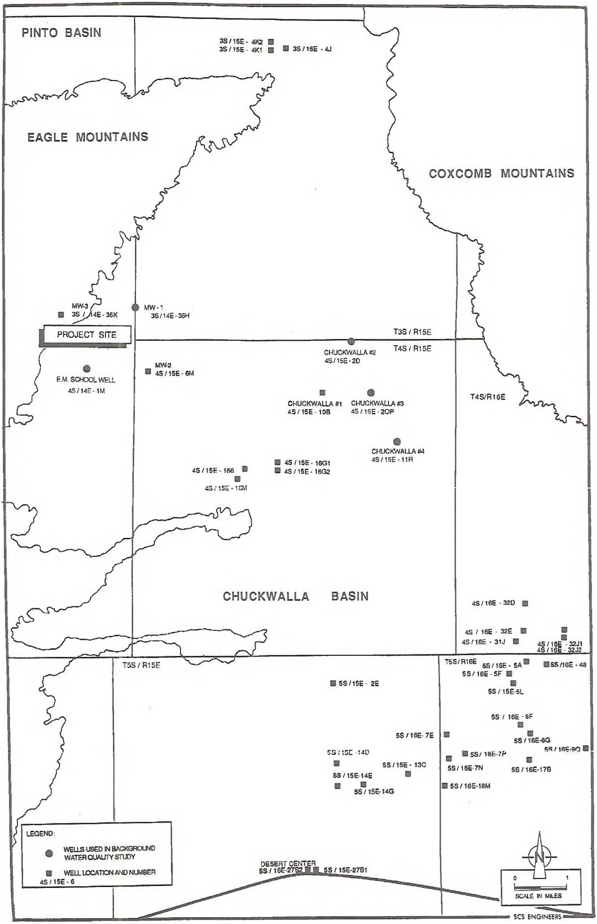


Figure 6. Northwest Chuckwalla Valley, Including Wells

TABLE 5: WATER WELLS WITHIN 10 MILES OF PROJECT SITE, EAGLE MOUNTAIN

Well	Blk.Eagle	MW-1	Pinto 2	KS Pinto 1	KS Pinto 9	EM School	KS Chuck.1	KS Chuck.2
Well #	3S/13E-1A	3S/14E-36H	3S/15E-4J	3S/15E-4K1	3S/15E-4K2	4S/14E-1M	4S/15E-10B	4S/15E-2D
Depth (ft)		386	532	532	658	740	520	535
Casing Diam.(in)		5	16	16	20	6.625	16	16
Perforated Int.(U)		326	250	390	449	475	271	331
Perforated Int.(L)		386	520	532	658	735	512	527
Date Completed		5/16/89	1954	1933	1957	2/1/86	4/14/64	3/30/64
Depth to Water (ft)		332.21			122	456	273	326
Date W.L. Measured		9/26/89			9/11/89	1/7/86	2/13/86	3/20/89
Altitude (ft MSL)		1045	1080.6	1048.1	1059	1240	749	793
Active/Destroyed	D	A	I	I	I	A	I	A
Yield (gpm)			1480	330	1200	75	1000	2400
Specific Capacity (g/ft)			45	18	19	6.8	13.3	30.8
Log		Y	Y	Y	Y	Y	Y	Y
Water Quality		Y	Y	Y	Y	Y	N	Y

TABLE 5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	KS Chuck.3	KS Chuck.4	MWD	Des. Utopia	Morris	Charpied	DaVall	Zwang
Well #	4S/15E-2P	4S/15E-11R	4S/15E-13C	4S/15E-16M1	4S/15E-16M2	4S/15E-16G	4S/15E-36A	4S/16E-19M
Depth (ft)	570	500	452	615	600		900	585
Casing Diam.(in	16	16	16	8.625	6.625		12.75	16
Perf. (U)	273	170	220	311	300		216	
Perf. (L)	562	500	328	615	600		900	
Date Compl.	4/30/64	3/8/77	1932	3/29/66	4/6/79		5/24/74	1961
Depth Water	262.4	227	183.7	304			105	126.9
Date W.L.	9/26/89	8/24/89	8/2/61	3/29/66			5/24/74	6/10/61
Altitude	737	699	683	822	820	773	585	621
Active/Dest.	1	A	I	A		A		1
Yield (gpm)	2800	1150	450					
Sp. Capacity	35.9	35.9						
Log	Y	Y	Y	Y	Y	N	Y	N
Water Qual.	N	Y	N	Y	N	Y	N	N

TABLE 5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	unknown	unknown	Tyler	unknown	Zwang	unknown	Penfield	J320 Ltd.
Well #	4S/16E-19P	4S/16E-21N	4S/16E-28H	4S/16E-29R	4S/16E-30D	4S/16E-30E	4S/16E-31D	4S/16E-31J
Depth (ft)	151	39	598	110	610		600	
Casing Diam.(in	6	12	10.75	12	16		15	
Perf. (U)			286					
Perf. (L)			588					
Date Compl.			12/19/79				1961	
Depth Water	111.6		50	79.9	113.9		95	
Date W.L.	4/21/61		12/19/79	10/6/61	5/17/61		6/15/61	
Altitude	600	565	523	545	607	591	581	545
Active/Dest.	I	D	A					A
Yield (gpm)					5075		2328	
Sp. Capacity							44.8	
Log	N	N	Y	N	N		Y	
Water Qual.	N	N	N	Y	Y		Y	

TABLE 5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	Boulder	Gesell	U.S.	Aljoba	Palladine*	Palen	MWD	Hillman 1
Well #	4S/16E-31R	4S/16E-32D	4S/16E-32E	4S/16E-32J	4S/16E-32M	4S/16E-35P	5S/14E-24R	5S/14E-35L1
Depth (ft)	36	610	77		555		733	600
Casing Diam.(in	6	14			12		6.5	8
Perf. (U)		137			265			
Perf. (L)		597			555			
Date Compl.	1907	3/30/53			1958		1933	1958
Depth Water		78.5			71.4		570	570
Date W.L.		10/6/61			6/16/61		1/31/33	11/9/61
Altitude	555	558	555	534	548	470	1072	1270
Active/Dest.	D	A	D	A	A	D	D	
Yield (gpm)		2750			2000			2
Sp. Capacity		80.9						
Log	N	Y	N	N	Y	N	Y	N
Water Qual.	N	Y	N	Y	Y	N	N	N

TABLE 5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	Hillman 2	Campbell	Beard	Franna*	Gribbin	Kanne	Ironwood	Franna
Well #	5S/14E-35L2	5S/14E-36A	5S/15E-1E	5S/15E-1L	5S/15E-2E	5S/15E-12N	5S/15E-12R	5S/15E-13B
Depth (ft)	641	877	755	784	728	746	400	788
Casing Diam.(in	8	10		16	16	16		12
Perf. (U)				349		526		215
Perf. (L)				784		746		788
Date Compl.	1961	1958		1960	1960	1961	6/65	1959
Depth Water	571	485.3	145.8	138.5	209.8	173.1		159.9
Date W.L.	11/9/61	4/9/61	6/10/61	6/10/61	6/10/61	4/28/61		9/18/61
Altitude	1270	1190	641	640	692	688	671	650
Active/Dest.		D			A			D
Yield (gpm)	6			3150		1900		3200
Sp. Capacity				42.6				16.8
Log	N	N	N	Y	N	Y	N	Y
Water Qual.	N	N	N	Y	N	Y	N	Y

TABLE 5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	McGoo's	Lk.Tam.4	Lk.Tam.2	Lk.Tam.1	Reese	Ragsdale	Ragsdale	Morring
Well #	5S/15E-13C	5S/15E-14D	5S/15E-14D	5S/15E-14G	5S/15E-15E	5S/15E-20	5S/15E-23N	5S/15E-23M1
Depth (ft)		1024	369	369	808	575	409	570
Casing Diam.(in)		16			16	8.625	6	6.625
Perf. (U)		780				455	369	490
Perf. (L)		1000				575	409	550
Date Compl.		7/18/68			1960	1/22/69	7/8/53	7/28/70
Depth Water				233	313.4	369	367	324
Date W.L.				9/11/89	6/11/61	1/22/69	3/28/61	7/28/70
Altitude	655	736	746	717	805		880	814
Active/Dest.	A	A	A	I				
Yield (gpm)		2400			2000			
Sp. Capacity		23.8			60.6			
Log	N	Y	N	N	N	Y	Y	Y
Water Qual.	Y	Y	Y	N	N	N	N	N

TABLE H5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	Morring	Ragsdale	C.Div.Hwy.*	Ragsdale	Ragsdale	Hancock	Capps	Carney
Well #	5S/15E-23M2	5S/15E-26	5S/15E-27B	5S/15E-27B	5S/15E-27H	5S/15E-29F	5S/16E-4D	5S/16E-5B1
Depth (ft)	550	603	637		598	680		114
Casing Diam.(in	6.625	8.625	10	8	12	6		6
Perf. (U)	360	443	553		430			
Perf. (L)	540	603	625		598			
Date Compl.	3/17/81	10/27/63	1954	1925	2/17/51			1948
Depth Water	400	352	395.1					70.9
Date W.L.	3/17/81	10/27/63	6/10/61					4/7/61
Altitude	815		900	900	904	1046	530	560
Active/Dest.				D	D	D	A	A
Yield (gpm)								
Sp. Capacity								
Log	Y	Y	Y	N	Y	N	N	N
Water Qual.	N	N	Y	N	N	Y	Y	Y

TABLE 5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	unknown	NewCal	Anderson	Peterson	Brown	Brown	Brown	Brees
Well #	5S/16E-5B2	5S/16E-5F1	5S/16E-5F2	5S/16E-6N	5S/16E-7M1	5S/16E-7M2	5S/16E-7	5S/16E-7
Depth (ft)		460	715	723	648	789	420	377
Casing Diam.(in)		10	12	12.75		12	6.625	6.625
Perf. (U)		240	224	228		280	320	297
Perf. (L)		460	705	722		789	420	377
Date Compl.		4/7/80	1960	1960	1958	1959	6/8/76	7/25/78
Depth Water		78	68.6		126.9	126.2	141	
Date W.L.		4/7/80	6/10/61		8/6/61	9/7/61	6/8/76	
Altitude		542	548	602	614	611		
Active/Dest.	A	A	D		A			
Yield (gpm)		760	1589	3850		3082		
Sp. Capacity		4.2	18.9	71.3		37.1		
Log	N	Y	Y	Y	N	Y	Y	Y
Water Qual.	N	N	Y	Y	Y	Y	N	N

TABLE 5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	Shorter	S.C.Gas	S.C.Gas	Airport	D.C.Farms	Airport	D.C.Farms	D.C.Farms
Well #	5S/16E-7	5S/16E-7P1	5S/16E-7P2	5S/16E-8F	5S/16E-8G	5S/16E-8K	5S/16E-8Q	5S/16E-9D
Depth (ft)	390	347	800	206		212		
Casing Diam.(in	6.625	8		14		14		
Perf. (U)	288	248		103		103		
Perf. (L)	390	347		188		198		
Date Compl.	11/12/71	9/19/52	1/86	1942		1942		
Depth Water	140	228	255	60		83		
Date W.L.	11/12/71	6/85	5/6/88	9/11/89		8/6/61		
Altitude		598	598	546	541	555	555	530
Active/Dest.		D	A	I	I	D	I	I
Yield (gpm)						180		
Sp. Capacity						9		
Log	Y	Y	N	Y		N	N	N
Water Qual.	N	N	N	Y		N	N	N

TABLE 5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	Corona	Des.Res.	unknown	Belsby	Gruendike	Belsby	Aljoba S	unknown
Well #	5S/16E-9E	5S/16E-9Q	5S/16E-14D	5S/16E-14N	5S/16E-15D	5S/16E-16Q	5S/16E-18M	5S/16E-18Q
Depth (ft)				480	76	485	790	37
Casing Diam.(in	6			10.75		10.75	15	
Perf. (U)				240		267		
Perf. (L)				480		485		
Date Compl.				3/29/79	1918	1/12/79	1960	
Depth Water							160.6	
Date W.L.							4/21/61	
Altitude	545	519	499	559	521	584	646	
Active/Dest.	D	A	D		D		A	D
Yield (gpm)				500		800		
Sp. Capacity								
Log	N	N	N	Y	N	Y	N	N
Water Qual.	N	N	N	N	N	N	Y	N

TABLE 5: INFORMATION ON WATER WELLS, EAGLE MOUNTIAN (CONTINUED)

Well	unnamed	Harmon	Ironwood
Well #	5S/16E-22N	5S/16E-25H	5S/16E-36F
Depth (ft)	516	680	357
Casing Diam.(in	6	14	6
Perf. (U)			261
Perf. (L)			357
Date Compl.		1956	6/3/55
Depth Water	188.2	134.6	274.1
Date W.L.	6/15/61	5/16/61	6/9/61
Altitude	653	603	730
Active/Dest.			
Yield (gpm)		1200	
Sp. Capacity			
Log	N	N	Y
Water Qual.	Y	Y	N

lowermost 60 feet of casing perforated (0.020-inch machine-cut slots). Static elevation of water was 717 feet MSL on September 26, 1989.

During March and April 1990, two additional ground water monitoring wells were installed in the Eagle Mountain area. Well MW-2 (4S/15E-GM) is located approximately 5,000 feet southeast of the East Pit, and MW-3 (3S/14E-35K) is located within the western portion of the East Pit.

MW-2 (4S/15E- M) was initially drilled using the dual-wall reverse circulation air rotary method to facilitate logging the geologic units penetrated; the 5-inch pilot hole was enlarged to 10 inches using a mud rotary system. Drilling penetrated only alluvium consisting of fine to coarse sand, gravel, silt, and some clay (well log in Appendix). MW-2 was constructed of 61 feet of 4-inch stainless steel screen and stainless/carbon steel blank casing to a total depth of 455 feet. After development, static water level was measured at 693 feet MSL. Water sampled from this well had TDS of 860 to 930 mg/l; water chemistry, in general, resembled that of other alluvial wells being of the sodium type, although the relative concentration of calcium and sulfate is slightly higher in MW-2, while the relative concentration of sodium and bicarbonate is slightly lower than in other nearby alluvial wells. Fluoride concentration (3.2 to 4.6 mg/l) is intermediate between that of the Kaiser Chuckwalla wells and the wells closer to the mine site.

MW-3 (3S/14E-35L) was drilled using a reverse circulation air rotary method with a downhole percussion hammer drilling and 8-inch hole to 380 feet. Drilling penetrated primarily metamorphic rocks consisting of quartzite, meta-arkose, and calc-silicate hornfels; the iron ore which is within the metamorphic sequence was encountered between depths of 90 and 150 feet (see log in this appendix). MW-3 was constructed of 61 feet of 4-inch stainless steel screen and stainless/carbon steel blank casing to a total depth of 350 feet. After development, static water level was measured at 757 feet MSL. Water sampled from this well had TDS of 1,600 to 2,400 mg/l; water chemistry is of a sodium + calcium sulfate type and, in general, resembles that of the School Well, although the relative concentration of sulfate is higher in MW-3, while the relative concentration of sodium is lower. Proportions of major ions are similar to those measured in the East Pit pond. Fluoride concentration (0.7 to 1.6 mg/l) is somewhat lower than that of the School Well.

TABLE 6
POTENTIAL 1986 WATER USE

Use	Rate	Acre-feet
Irrigated Crops		
Jojoba	4,005 acres @ 2.2 acre-feet/year	8,811
Jojoba with asparagus	457 acres @ 4.6 acre-feet/year	2,102
Asparagus	1,309 acres @ 8.3 acre-feet/year	10,865
Citrus	14 acres @ 4.5 acre-feet/year	63
Dates	14 acres @ 8.0 acre-feet/year	112
Vines	5 acres @ 4.5 acre-feet/year	23
Pasture	10 acres @ 6.4 acre-feet/year	64
Total		22,040
Tamarisk Lake development		865
Gas company		5
Miscellaneous domestic		50
TOTAL		22,960

Ground Water Usage and Water Supply--

Water uses in the northwestern Chuckwalla Valley include domestic (drinking and other), agricultural (principally irrigation), and industrial. The Kaiser Chuckwalla wells have, in the past, been used principally for industrial water supply. The Eagle Mountain School Well was used previously for domestic water supply, although it is not actively being pumped at the present time.

MW-1, MW-2, and MW-3 are used only for ground water quality monitoring. Most of the other water wells within 10 miles of the project site are used either for domestic or irrigation supply. One exception is the Southern California Gas Company Well near the Desert Center Airport, which is used to supply cooling water for gas compression equipment.

Chuckwalla Valley ground water use was the subject of a study by John Mann (1986). The study indicated that approximately 23,000 acre-feet of ground water was expected to be withdrawn from the northwestern Chuckwalla Valley during 1986 (Table 6). Mann's study showed that this rate of water use would result in an overdraft condition (more water being withdrawn than being added through recharge) for the ground water basin. The greatest volume of water at the time of this study was being used for irrigation.

Since 1986, the acreage in agricultural use seems not to have increased and may have decreased. For this reason, overall water use should not be significantly greater than the amounts estimated in 1986. If overall water use has remained approximately constant since the time of Mann's study, this would suggest that the northwestern Chuckwalla Valley may still be in an overdraft condition.

Total usable water reserves in the northeastern portion of the Chuckwalla Valley were estimated by Mann to be approximately 1 million acre-feet, assuming 100 feet of saturated sediments and a specific yield of 15 percent. This estimate is probably conservative, particularly in light of the fact that probably 200 or more feet of saturated sediments underlie the central portion of the Chuckwalla Valley.

The Mann study also indicated that the water level in one well (Southern California Gas Company [SCGC] well; 5S/16E-7P) in an area of concentrated agricultural activity in the northwestern Chuckwalla Valley experienced as much as 105 feet of drop during a 5-year period, beginning in 1981. However, other wells in this area do not show such a great change in water level. More recent information from SCGC indicates that this well (5S/16E-7P) was replaced with a new well in 1986 (Personal Communication, Jim Green, SCGC, Blythe). Water in the replacement well has fluctuated within a range of only about 5 feet between the years 1986 and 1989.

Background Ground Water Quality Monitoring--

Background water quality characterization in the project area is necessary to meet the requirements of the California Administrative Code, Title 23, Waters, Chapter 3, Subchapter 15 (Section 2595, g, 7). These regulations are administered by the Regional Water Quality Control Board (RWQCB). To satisfy the regulations, a program for systematic collection of data on ground water quality was initiated in June 1989. The program for background ground water quality monitoring in the project area was based on that proposed in an October 1988 report by SCS Engineers and approved by the RWQCB.

The monitoring program was designed to characterize ground water quality in the vicinity of the project site. The proposal called for the drilling of two 400-foot-deep exploratory borings, one located about 2,000 feet east of the East Pit (downgradient), and one located about 3,000 feet southwest of the pit (upgradient). Two upgradient holes were subsequently drilled, one to 230 feet and one to 400 feet. Both of these holes, drilled in igneous plutonic and metamorphic bedrock, failed to encounter ground water. One downgradient hole was drilled to 400 feet in alluvium, and encountered ground water at approximately 330 feet. This hole was completed as a monitoring well (MW-1) in May 1989. The logs of these borings are shown in this appendix.

Following the installation of MW-1, the background water quality monitoring program was instituted. The program consists of quarterly ground water sampling from the following wells:

- Monitoring Well MW-1, located approximately 2,000 feet east of the East Pit.
- Eagle Mountain School Well, located approximately 4,000 feet south of the East Pit.
- Kaiser Chuckwalla Wells No. 2 and 4, located about 5 miles east-southeast of the East Pit. Later, Kaiser Chuckwalla Well No. 3 was substituted when Well No. 2 became inoperable.

The location of these wells is shown on Figure 7.

Water samples are tested for the following parameters:

- pH, specific conductance (EC), and temperature in the field.
- Volatile organic compounds by EPA Method 524.2.
- General minerals, including TDS, alkalinity, carbonate, bicarbonate, chloride, fluoride, sulfate, nitrate, Ca, Cu, Fe, Mn, Mg, K, Na, and Zn.
- Metals by atomic absorption or induction coupled plasma analysis, including Sb, As, Ba, Be, Cd, Cr, Co, Pb, Hg, Mo, Ni, Se, Ag, Tl, and V.
- Other parameters, including chemical oxygen demand (COD), total organic carbon (TOC), total organic halides (TOX), ammonia, and cyanide.

Following four quarters of monitoring, the results of the data gathered were statistically analyzed and interpreted; results and a discussion of data were included in a report submitted to the RWQCB (SCS Engineers, 1990).

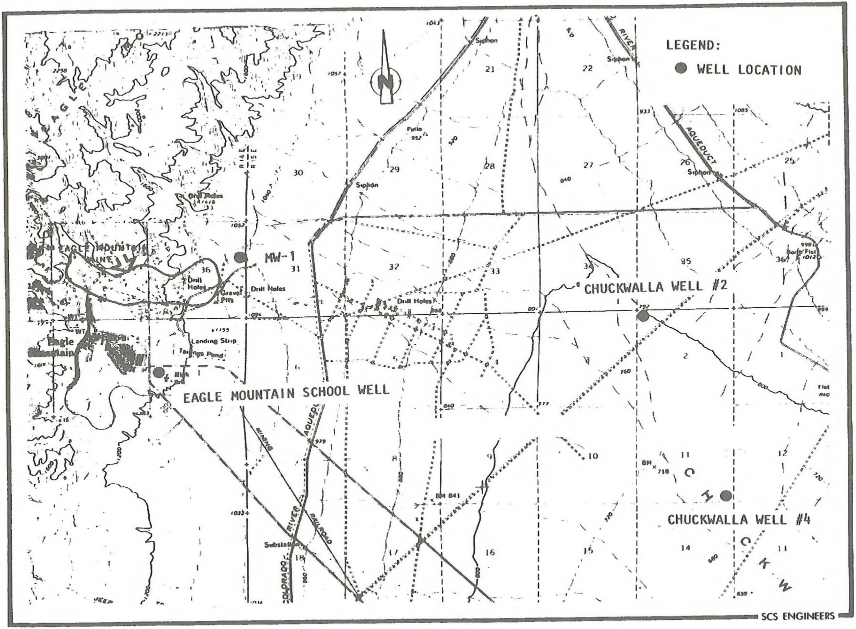


Figure 7. Background Ground Water Quality Monitoring Points.

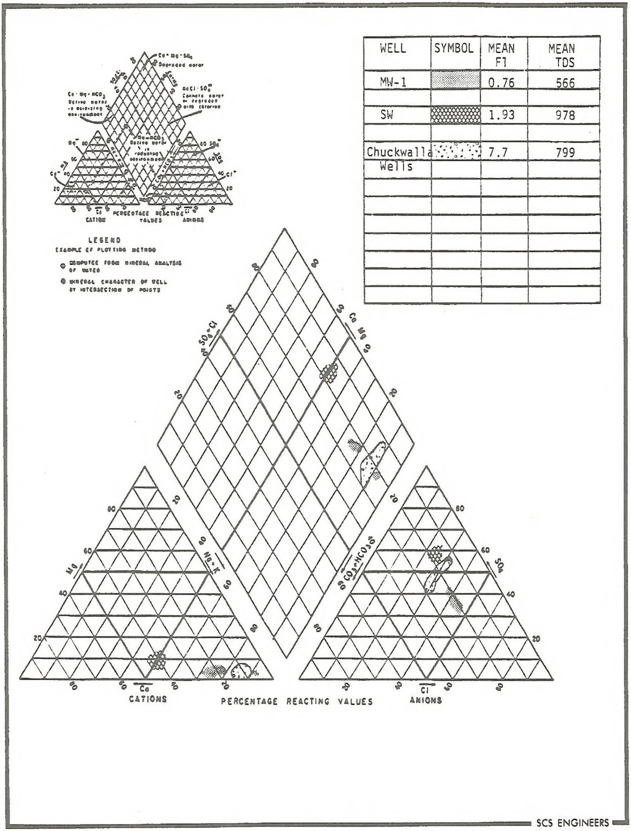
Wells were sampled in June, September, and December 1989, and in March 1990. Water quality data indicate that the ground water is generally of the sodium sulfate type. As expected, water quality data from the two Kaiser Chuckwalla wells, located in geologically similar areas 1 to 2 miles apart, are comparable. Major ion composition of water from MW-1 is similar to that of the Chuckwalla wells; water from the Eagle Mountain School well is similar to that of the other wells in anionic composition, but contains a lower proportion of sodium and a greater proportion of calcium. These data are shown graphically on Figure 8, which indicates the major ion concentrations in the four wells.

TDS content of the water ranges from 500 to 1,000 mg/l, and is highest in the Eagle Mountain School Well and lowest in MW-1. Laboratory pH ranges from 6.6 to 8.3; pH is lowest in MW-1, and highest in Kaiser Chuckwalla Well No. 4. Temperature of ground water is relatively high, with wells closest to the project site averaging nearly 32°C, and Kaiser Chuckwalla wells averaging about 30°C.

The only chemical species detected in concentrations greater than national primary drinking water standards was fluoride, which was above these limits in all wells except MW-1. Fluoride, whose presence renders much of this area's water unfit for drinking without prior treatment, ranged from 0.6 to 11 mg/kg in the four wells. Fluoride concentration was lowest in MW-1 and highest in Kaiser Chuckwalla Well No. 4.

No metals were found at concentrations above national primary drinking water standards. Measurable COD (an indication of the quantity of organic matter present) was found only in the Eagle Mountain School Well in June 1989, and MW-1 in September. The School well had the highest concentration of TOC in June. No volatile organic compounds have been detected in any of the four wells.

Overall water quality in the four wells is not considered to be high. In addition to generally high fluoride concentration, TDS levels are all above 500 mg/l (the maximum level recommended in the national secondary drinking water standards). In addition, sulfate concentration equaled or exceeded the national secondary standard of 250 mg/l in all wells except MW-1 and Chuckwalla Well No. 4 on both sampling dates, and in Chuckwalla Well No. 4 in



WELL	SYMBOL	MEAN FI	MEAN TDS
MW-1	▒	0.76	566
SW	▩	1.93	978
Chuckwalla Wells	⁘	7.7	799

Figure 8. Trilinear Diagram of Ground Water Quality.

September 1989. Concentrations of iron and manganese were at or above national secondary drinking water standards in MW-1 in all samples, and the School Well in September through March. The laboratory results for these two chemical species may include suspended sediment as well as dissolved iron and manganese.

Local Water Quality--

To provide additional data on water quality in the local ground water basin, a program was instituted for sampling and analyzing water from irrigation, domestic, and other water production wells in the northwestern Chuckwalla Valley. This program was first implemented during August 1989. The data provide a supplement to background water quality data being obtained as described in the previous section.

Samples are being taken from selected wells, with the well owner's permission, for general minerals analysis. To date, nine wells have been sampled. In addition, previous water quality analyses have been obtained from published and unpublished records of the California Department of Water Resources, the Colorado River RWQCB, the Riverside County Department of Environmental Health, the U.S. Geological Survey, Kaiser Steel Resources, Inc., and other sources. Water quality analyses are summarized in Table 7; laboratory reports on recent water quality analyses have been reproduced in this appendix.

Untreated ground water in the northwestern Chuckwalla Valley is of a quality which is satisfactory for irrigating the common types of crop grown locally and for domestic uses besides drinking. Locally, ground water may contain levels of boron or sodium which are too high for irrigation of some crop species. Ground water from almost all areas of the northwestern Chuckwalla Valley contains fluoride concentrations which are above the national primary drinking water standards. These regulations specify a temperature-dependent maximum concentration of fluoride which is between 1.4 and 2.4 mg/l. This concentration is 1.4 mg/l for the air temperatures experienced in the Chuckwalla Valley. Nearly all wells in the northwestern Chuckwalla Valley yield water with greater than 1.4 mg/l of fluoride.

TABLE 7: CHUCKWALLA BASIN WATER QUALITY DATA

Well	MW-1	MW-1	EM School	EM School	EM School	EM School	KS Chuck.2	KS Chuck.2
Well #	3S/14E-36H	3S/14E-36H	4S/14E-1M	4S/14E-1M	4S/14E-1M	4S/14E-1M	4S/15E-2D	4S/15E-2D
Date	9/26/89	6/15/89	9/27/89	6/15/89	9/20/88	2/8/86	9/26/89	6/15/89
pH	8	6.6	7.7	7.4	7.6	8.2	8.2	8
EC	790	970	1500	1500	1360	1321	1400	1500
TDS	510	790	1000	970	774	907	900	870
Ca	26	16	120	120	113	109	32	43
Mg	3.4	2.8	22	22	16.4	21	2.2	2.1
Na	130	221	170	149	149	160	270	270
K	4.3	5.5	6.1	3	3		4.6	4.6
Fe	1.3	13	5.6	0	0	0.08	0.03	0
HCO3	98	93	170	130	163.9	177	150	110
CO3	0	0	0	0	0	0	0	0
SO4	110	150	420	430	302	390	320	340
Cl	110	97	140	140	140	123	140	140
NO3	20	1.5	18	7.4	14.8	2.3	20	13
Fl	0.7	1.2	1.8	2	2.4	2	6.2	6.9
Hard.	79	52	390	300	348		89	118.6

Analyses in mg/l (parts per million) except for pH and EC (micromhos). If chemical species not detected in analyses it is recorded as 0 on this table. Blank spaces indicate analyses not performed.

* Data from Dept. Water Resources Bulletin 91-7.

TABLE 7: CHUCKWALLA BASIN WATER QUALITY DATA (CONTINUED)

Well	KS Chuck.2	KS Chuck.4	KS Chuck.4	KS Chuck.4	Des. Utopia	Des. Utopia	Charpied	unnamed*
Well #	4S/15E-2D	4S/15E-11R	4S/15E-11R	4S/15E-11R	4S/15E-16M1	4S/15E-16M1	4S/15E-16G	4S/16E-29R
Date	9/20/88	9/26/89	6/15/89	3/21/77	1/5/82	8/24/78	8/24/89	10/5/61
pH	7.8	8.3	8.1	8.2	8.5	9	8.2	8.3
EC	1300	1200	1200	1110			930	1230
TDS	745	730	690	675	216	472	560	778
Ca	38.6	25	23	17.6	4	7.2	17	0
Mg	2.3	1.2	1.2	1.04	1	0.1	0.72	1
Na	255	230	230	208	90	152	160	274
K	2.4	3.7	3.8	3.17			2.2	4.3
Fe	0.1	0.07	0.03	0	0	0.37	0	
HCO3	143.1	160	120	130	40	2	56	290
CO3	0	0	0	0	14	2	0	18
SO4	282	240	250	218	139	154	240	165
Cl	146	110	100	96	78		110	110
NO3	17	5.3	0	4.88		12.4	2.8	6.6
Fl	6.9	9.8	11	10.2	10.2	8.8	6.6	4.4
Hard.	106	67	61.9		34	14	3	

TABLE 7: CHUCKWALLA BASIN WATER QUALITY DATA (CONTINUED)

Well	Zwang*	Penfield*	Gesell	Gesell*	Gesell*	Gesell*	Palladine*	Franna*
Well #	4S/16E-30D	4S/16E-31D	4S/16E-32D	4S/16E-32D	4S/16E-32D	4S/16E-32D	4S/16E-32M	5S/15E-1L
Date	8/3/61	6/10/61	10/4/89	10/6/61	5/16/57	4/12/53	10/11/61	3/21/60
pH	8	8	8	7.1	8.2		8.2	8.7
EC	925	1060	3100	925	882	838	885	660
TDS	554	604	2000	512	523	498	508	403
Ca	17	16	150	14	12	14	12	72
Mg	1	0	13	0	1	2.9	0	10
Na	179	201	500	176	163	163	166	130
K	2.7	2.7	6.4	2	1.9		16	1.6
Fe			0.03					
HCO3	82	134	100	63	70	76	43	59
CO3	0	0	0	0	0	0	0	7
SO4	219	212	620	171	164	157	162	112
Cl	90	96	440	113	110	123	124	69
NO3	9.3	5.6	110	1.2	0.5	0	3.7	1.9
Fl	3.6	9.5	5.1	7.9	7.5		7.4	12
Hard.	45	40	370	35	33	46	30	221

TABLE 7: CHUCKWALLA BASIN WATER QUALITY DATA (CONTINUED)

Well	Kanne*	Franna*	McGoo's	Lk.Tam.4	Lk.Tam.2	Ragsdale*	C.Div.Hwy.*	Ragsdale*
Well #	5S/15E-12N	5S/15E-13B	5S/15E-13C	5S/15E-14D	5S/15E-14D	5S/15E-23N	5S/15E-27B	5S/15E-27H
Date	5/18/61	6/18/61	9/11/89	9/12/89	9/12/89	6/10/61	5/10/58	9/5/58
pH	7.9	7.8	7.9	8.2	8	8.1	7.8	8.1
EC	720	1560	1700	730	1300	2100	763	3270
TDS	406	514	950	430	760	1150	486	2060
Ca	14	49	45	14	34	62	28	159
Mg	0	5	5.2	0.31	0.95	4	3	19
Na	129	251	280	130	230	350	131	446
K	2.7	5.5	5.9	2.9	3.3	13	6.5	22
Fe			0	0.04	0			
HCO3	88	67	76	110	100	76	135	75
CO3	0	0	0	0	0	0	0	0
SO4	115	128	140	120	200	154	117	274
Cl	74	351	380	75	180	503	100	809
NO3	8.7	6.8	5.6	4.8	34	8.7	0.6	6
Fl	8.7	6.8	5.1	7.5	8.4	4.8	2.2	6
Hard.	35	143	131	36.3	88.9	170	84	497

TABLE 7: CHUCKWALLA BASIN WATER QUALITY DATA (CONTINUED)

Well	Ragsdale*	Ragsdale*	Hancock*	Hancock*	Carney*	Carney*	Carney*	Carney*
Well #	5S/15E-27H	5S/15E-27H	5S/15E-29F	5S/15E-29F	5S/16E-5B1	5S/16E-5B1	5S/16E-5B1	5S/16E-5B1
Date	5/25/55	5/25/52	10/11/61	5/10/58	5/16/61	5/10/58	5/25/55	5/21/52
pH	7.8	8	8	7.8	7.9	7.5	8.6	8
EC	2980	2380	433	450	865	861	837	957
TDS	1810	1560	252	288	479	533	505	514
Ca	153	96	12	15	16	14	15	15
Mg	10	7	2	0	0	1	2	1.6
Na	480	410	82	88	161	167	165	168
K	16	16	2.3	2.8	3.1	3.9	3.2	
Fe								
HCO3	68	66	204	229	107	120	98	112
CO3	0	0	0	0	0	0	14	0
SO4	243	160	9	7	147	154	148	128
Cl	840	702	14	25	94	108	88	78
NO3	13	4.9	25	15	12	0.1	6	6.2
Fl	6		3.9	1.4	7	2.2	12	35
Hard.	423	269	40	39	40	39	46	45

TABLE 7: CHUCKWALLA BASIN WATER QUALITY DATA (CONTINUED)

Well	Peterson*	Brown*	Airport*	Airport*	Airport*	Aljoba S	Aljoba S*	unnamed*	Harmon*
Well #	5S/16E-6N	5S/16E-7M2	5S/16E-8F	5S/16E-8F	5S/16E-8F	5S/16E-18M	5S/16E-18M	5S/16E-22N	5S/16E-25H
Date	5/17/61	11/7/61	5/10/58	9/17/54	5/21/52	9/12/89	11/7/61	9/12/61	5/10/58
pH	7.9	8.7	8	8.4	8.3	8.7	8.4	8	7.9
EC	618	717	787	788	770	710	753	2410	1220
TDS	362	409	512	474	478	420	453	1340	739
Ca	6	6	10	12	7.2	4.7	64	72	40
Mg	2	0	1		1.1	0.03	0	0	2
Na	126	143	155	151	162	150	149	409	198
K	1.6	1.6	2.8	2.4		1		4.7	6.1
Fe						0			
HCO3	67	55	105	104	104	89	73	21	92
CO3	0	12	0	2	1	0	7	0	0
SO4	106	106	144	132	135	110	120	144	120
Cl	74	89	95	81	88	73	85	645	248
NO3	6.8	1.9	1.5	7.1	3.7	13	11	5.6	3.7
Fl	11	6.9	2.2	1.6	13	7.8	9	3.1	5
Hard.	23	15	30	30	22	12	160	160	110

TABLE 8. CHEMICAL CHARACTERISTICS OF LEACHATE

				Leachate**	
Constituent	Range* (mg/l)	Range‡ (mg/l)	Range# (mg/l)	Fresh	Old
Chloride (Cl)	34 - 2,800	100 - 2,400	600 - 800	742	197
Iron (Fe)	0.2 - 5,500	200 - 1,700	210 - 325	500	1.5
Manganese (Mn)	0.06 - 1,400	--	75 - 125	49	--
Zinc (Zn)	0 - 1,000	1 - 135	10 - 30	45	0.16
Magnesium (Mg)	16.5 - 15,600	--	160 - 250	277	81
Calcium (Ca)	5 - 4,080	--	900 - 1,700	2,136	254
Potassium (K)	2.8 - 3,770	--	295 - 310	--	--
Sodium (Na)	0 - 7,700	100 - 3,800	450 - 500	--	--
Phosphate (P)	0 - 154	5 - 130	--	7.35	4.96
Copper (Cu)	0 - 9.9	--	0.5	0.5	0.1
Lead (Pb)	0 - 5.0	--	1.6	--	--
Cadmium (Cd)	--	--	0.4	--	--
Sulfate (SO_4)	1 - 1,826	25 - 500	400 - 650	--	--
Total N	0 - 1,416	20 - 500	--	989	7.51
Conductivity (umhos)	--	--	6,000 - 9,000	9,200	1,400
TDS	0 - 42,276	--	10,000 - 14,000	12,620	1,144
TSS	6 - 2,685	--	100 - 700	327	266
pH	3.7 - 8.5	4.0 - 8.5	5.2 - 6.4	5.2	7.3
Alk. as $CaCO_3$	0 - 20,850	--	800 - 4,000	--	--
Hardness, Total	0 - 22,800	200 - 5,250	3,500 - 5,000	--	--
BOD_5	9 - 54,610	--	7,500 - 10,000	14,950	--
COD	0 - 89,520	100 - 51,000	16,000 - 22,000	22,650	81

* Office of Solid Waste Management Programs, Hazardous Waste Management Division. An environmental assessment of potential gas and leachate problems at land disposal sites. Environmental Protection Agency Publication SW-110 (Cincinnati), U.S. Environmental Protection Agency, 1973. 33 pp. (Open-file report, restricted distribution.)

‡ Steiner, R. C., A. A. Fungaroli, R. J. Schoenberger, and P. W. Purdom. Criteria for sanitary landfill development. Public Works, 102(2):77-79, March 1971.

# Gas and leachate from land disposal of municipal solid waste; summary report. Cincinnati, U.S. Environmental Protection Agency, Municipal Environmental Research Laboratory, 1975. (In preparation.)

** Brunner, D. R., and R. A. Carnes. Characteristics of percolate of solid and hazardous waste deposits. Presented at American Water Works Association 94th Annual Conference, June 17, 1974. Boston, Massachusetts. 23 pp.

Other dissolved constituents of the local ground water, including trace elements, are generally below the maximum acceptable levels specified in the primary drinking water standards. However, even ignoring elevated levels of fluoride, water quality in the northwestern Chuckwalla Valley is relatively poor for drinking purposes. TDS concentrations, which were found to range from 430 to 2,500 mg/l in recent water analyses, average about 880 mg/l. Water with TDS concentrations between 500 and 1,000 mg/l is considered to be of marginal quality for drinking. In addition, the sulfate content of Chuckwalla Valley water is relatively high (average about 240 mg/l). Sulfate in water can impart a bitter taste, and, for those not accustomed to drinking it, water high in sulfate salts can act as a laxative.

There are several differences in water chemistry between wells tapping the alluvial aquifer, and those completed in bedrock aquifers. Water sampled from bedrock in the vicinity of the Eagle Mountain mine has TDS generally above 950 mg/l, while alluvial water is generally below this level in the vicinity of the project site. Bedrock water tends to be proportionately higher in calcium, magnesium, and sulfate, and is lower in sodium. Fluoride concentrations tend to be lower in wells located near the mine area than those located closer to the central axis of the northwestern Chuckwalla Valley; however, this does not differentiate bedrock from alluvial water. Temperature of water produced from bedrock wells tends to be slightly higher than that of water from alluvial wells, although all ground water from the northwestern Chuckwalla Valley is relatively high in temperature. These differences in water chemistry may indicate that the source of bedrock and alluvial water differs, and that there is only limited communication between ground water from the two sources.

Information on the spatial distribution of water quality measurements is provided in Figure 9.

Occurrence and Movement of Ground Water--

Depth to ground water in the northwestern Chuckwalla Valley has been measured from 501 feet below ground level in the Eagle Mountain School Well to as shallow as 60 feet in the Desert Center Airport area. Water level elevations range from an estimated 800 feet above MSL at the boundary between the Chuckwalla Valley and the Pinto Basin, to below 500 feet MSL in the airport area.

A regional contour map of the upper surface of ground water is presented in Figure 10. Generalized ground water flow directions are indicated on the map by arrows. Ground water flow is generally from the margins of the valley towards the center of the valley, and from north-northwest to south-southeast within the valley. As one approaches the Desert Center area, flow direction shifts to a more easterly direction.

Ground water gradient is estimated from the map to average about 0.01 foot/foot (or cm/cm) in the area between the East Pit and the Kaiser Chuckwalla wells. Average permeability (hydraulic conductivity) of the water-bearing valley alluvium can be estimated to be 1 x 10^{-2} cm/sec (slightly greater than the average permeability estimated at the Chuckwalla wells). An estimate of 1 x 10^{-2} cm/sec is within the range one would expect for this aquifer, based on grain size and textural characteristics. Porosity of the alluvium is estimated at 35 percent. Given these assumptions, the average net velocity of water moving laterally through the alluvial aquifer can be calculated by multiplying the hydraulic conductivity by the gradient and dividing by the porosity. The result is a velocity of about 3 x 10^{-4} cm/sec, or about 300 feet (90 meters) per year. Actual velocity in the Eagle Mountain project area itself is probably less because of a locally flatter ground water gradient.

Direction of ground water movement within granitic and metamorphic bedrock beyond the immediate vicinity of the East Pit cannot be accurately estimated with data currently available, although it probably conforms approximately to surface drainage patterns. The permeability of the unfractured bedrock is very low, and bedrock fractures most likely control the movement of water. Permeability has been estimated at 1.8 x 10^{-3} cm/sec for the Eagle Mountain School well, and at 1.5 x 10^{-5} cm/sec for bedrock monitoring well MW-3. Permeability of bedrock exposed at the surface of the western portion of the East Pit was calculated, based on the infiltration rate of ponded rain water as 3.8 x 10^{-5} cm/sec. Porosities of bedrock are difficult to estimate, but are expected to be in the range of 1 to 10 percent.

ENVIRONMENTAL IMPACTS

Surface Water

During operation of the proposed landfill, contaminated surface waters could result from the contact of surface water with uncovered refuse. Potential sources of water would be direct precipitation, run-on from surrounding slopes, and run-on of floodwaters from Eagle Creek. Prior to the filling of the East Pit to surrounding grade, surface waters which might enter the landfill would not run off, but would be diverted in the landfill so as to avoid contact with refuse. (The final landfill surface will be above the present East Pit rim.) A final cover, including a low-permeability layer that will separate surface water from the refuse, will be placed.

The impact of the proposed landfill on surface waters is not expected to be significant. Due to the limited precipitation in the area, and with the implementation of the planned landfill drainage and cover provisions, it is anticipated that impacts on downstream surface water from the proposed landfill will be insignificant. Mitigation measures recommended for the drainage system are described in the section on Drainage.

The Metropolitan Water District of Southern California (MWD), which operates the Colorado River Aqueduct that crosses the Chuckwalla Valley, has expressed concern that windblown litter from the landfill could be deposited on uncovered portions of the aqueduct. The nearest uncovered portion of the aqueduct is approximately 4,000 feet east from the nearest part of the proposed landfill. Due to the distance involved, it is expected that only minute quantities of windblown material could be deposited in the aqueduct. Landfill operations will include a litter control program to ensure that refuse is promptly incorporated into the working face of the landfill to limit the opportunity for litter formation, and will also feature the periodic collection of litter by site personnel.

Ground Water

Leachate Production--

When water comes in contact with solid waste, leachate can be produced. Leachate is created when water, regardless of its source, moves through refuse fill and mobilizes substances contained in the fill. Leachate is typically a solution containing dissolved or finely suspended solid matter, dissolved organic waste, and end products of microbial decomposition. Landfill leachate is basically a wastewater characterized by non-neutral pH, high BOD and COD, and relatively high concentrations of dissolved inorganic substances, possibly including heavy metals. Compositional analyses for some leachates are shown in Table 8. A main concern at any landfill is the generation of leachate and the potential for migration of leachate from the landfill, with consequent degradation of local ground water.

If the capacity of the refuse fill to retain water (field capacity) is exceeded, water may be discharged into adjacent materials. If these materials are sufficiently permeable so that they are capable of transmitting significant quantities of fluids, migration of leachate to usable ground water can occur.

For any leachate migration to occur, moisture in the landfill must exceed the field capacity of the refuse fill. Potential sources of water in the refuse include:

- The intrinsic moisture content of the refuse.
- Infiltration of direct precipitation and of uncontrolled surface water run-on.
- Water produced by the microbiological reactions that occur during anaerobic decomposition of the buried refuse.
- Infiltration of ground water into refuse.

These potential sources are discussed below.

The physical characteristics of the incoming refuse can have a significant influence on leachate composition and production. Municipal solid waste typically has a moisture content of about 25 percent. The refuse coming into the Eagle Mountain site will have undergone sorting to remove recyclable materials at transfer stations near refuse sources, and will have been compacted for placement in shipping containers. No free liquid will be accepted as incoming refuse. Sorting activities will provide an opportunity to remove containers of liquid waste improperly contained in the solid waste stream. The removal of compostable yard waste and other high-moisture wastes would further reduce the overall moisture content of the refuse. The hot, dry climate of the area will result in evaporation of significant quantities of water from the refuse during and after work at the active face. Compaction and incidental drying of refuse during handling could further reduce the original moisture content.

The addition of water to the landfilled refuse from direct precipitation at Eagle Mountain is expected to be minimal, due to the arid climate. The average rainfall is approximately 3 inches per year. Considerably more moisture will probably be lost from the refuse through evaporation (pan evaporation measured by Kaiser at approximately 155 inches per year) than is added through direct precipitation, since it is expected that the refuse will be exposed to some drying influence under a layer of daily cover for some time.

Uncontrolled run-on to the landfill is also expected to be minimal. Drainage in the area surrounding the landfill will be subject to engineering controls, These controls are expected to greatly reduce or eliminate run-on.

Accumulation of moisture generated during anaerobic decomposition is expected to be small. Slight or no water is normally generated during anaerobic decomposition. Microbial decomposition rates are expected to be low as well.

Direct infiltration of ground water into the refuse fill could, in theory, provide a source of water for leachate generation. Infiltration of ground water could be expected only if the upper level of ground water reaches an elevation greater than the lowest level of refuse. This is considered unlikely because refuse will not be placed within 50 feet of the highest historically known level achieved by ground water.

The phasing plan for the landfill avoids disposal in the part of the East Pit which currently contains water. Prior to initiating operations in this part of the pit, the bottom of the pit will be raised by filling this area with coarse tailing material to an elevation at least 50 feet higher than the highest historically known ground water level. This degree of separation between historic ground water levels and the lowest elevation where landfilling will occur is anticipated to mitigate this potential impact to levels of insignificance.

Volumes of leachate from all sources within the landfill are expected to be small, and would be controlled by the leachate collection system to be installed at the site.

Potential Leachate Flow Paths--

The opportunity for migration of leachate from the landfill could result from water content reaching field capacity within the refuse. If leachate is not pumped from the landfill, the accumulation of fluids can result in the saturation of the landfill liner. Once the liner becomes saturated and a sufficient fluid head is applied, leachate could move through the liner. Even if this were to occur, the volume of leachate penetration through time is expected to be very low. Conceptual landfill design has involved application of computer models to determine leachate generation volumes.

If leachate were to escape from the landfill, it would encounter either bedrock or older alluvium, depending on which portion of the landfill leaked. The intergranular permeability of the bedrock underlying the East Pit is very low, on the order of 1×10^{-9} to 1×10^{-11} cm/sec based on lithology. Extensive fracturing of this type of material, however, may increase the net permeability to the range of 1×10^{-3} to 1×10^{-6} cm/sec. Alluvial permeability in the neighborhood of 1×10^{-2} cm/sec can be estimated from pump test data at Kaiser's Chuckwalla wells and published data. Bedrock permeability has been estimated at close to 1×10^{-3} cm/sec at the Eagle Mountain School well.

If leachate leakage were to occur, earliest leakage would be most likely at the lowest portion of the landfill to be initially filled. Located in the western portion of the East Pit, this portion of the landfill is underlain by bedrock, as is most of the pit. Any leakage in this area would initially affect bedrock. Ground water is located approximately 300 feet below this area. Ground water gradient appears to slope easterly under the western portions of the East Pit, and may slope westerly under the eastern portions of the pit. Any leakage of leachate from the landfill would tend to move towards the central part of the pit, to the area of the East Pit pond.

Geological mapping of the East Pit area reveals a general pattern of two major sets of bedrock joints (planar fractures). As shown in Figure 11, these trend approximately north-northwest/south-southeast (N40°W), and east/west (N80°W). Because of the easterly ground water gradient, net movement of a leachate plume through fractures would be expected also to be in an easterly direction.

The lateral distance from the easternmost portion of the initial fill area eastward to the nearest alluvium is approximately 4,500 feet. For the purpose of calculating a maximum expected flow velocity, we have assumed that potential leachate movement will be through bedrock fractures with an effective permeability averaging 1×10^{-3} cm/sec (a high value for rocks of this type). If the ground water gradient averages 0.01 and the porosity of fractured bedrock is 10 percent (see subsection on the Occurrence and Movement of Ground Water), the resulting flow velocity is 1×10^{-4} cm/sec, or about 100 feet per year (30 meters per year). This indicates that ground water affected by leachate leaking from the portion of the site first filled could possibly move into the alluvium in 45 years, if ground water flows directly east (note that these numbers do not take into account the attenuation of contaminant movement which commonly occurs due to absorption and desorption of dissolved substances on the surface of geologic materials through which ground water travels; these effects would tend to slow the movement of contaminants).

Based on recently installed ground water monitoring wells, and on information obtained at the East Pit pond, it appears that there is a reversal of the generally eastward-sloping potentiometric surface of the ground water in the vicinity of the East Pit (Figure 12). Excavation of the central portion of the pit to a depth below the upper surface of the ground water and ground water discharge at this point most likely has resulted in a depression in the potentiometric surface. As a result, the ground water surface slopes westward under portions of the eastern half of the pit. The fact that the gradient

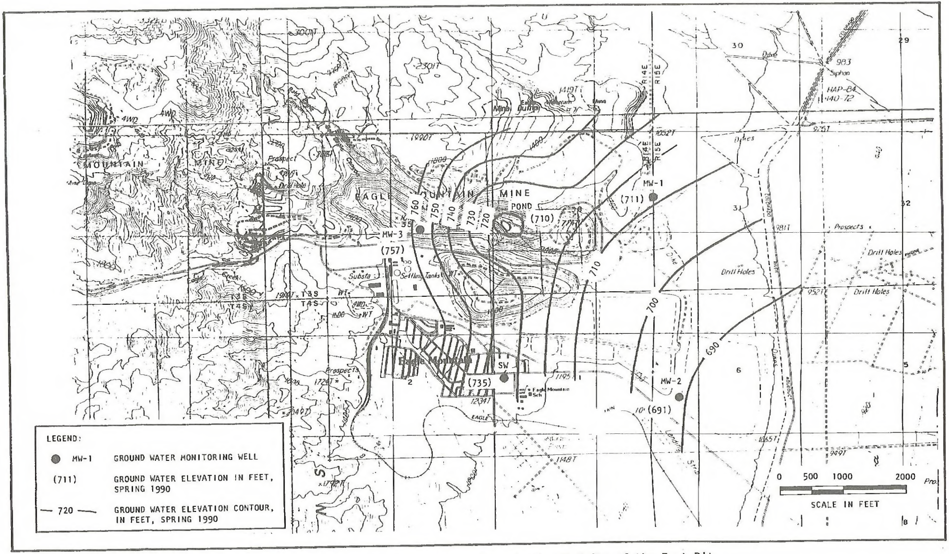


Figure 12. Ground Water Surface Elevations in the Vicinity of the East Pit.

reversal occurs near the alluvium/bedrock interface suggests that communication between alluvial and bedrock aquifers is limited.

Low recharge rates following bailing or pumping in both MW-1 and MW-2 suggest low permeability of at least some alluvial sediments in the area near the margin of the Chuckwalla Valley. This could be due to the presence of debris flow or other relatively low-permeability deposits near the mouth of Eagle Creek Canyon. In situ aquifer testing at MW-2 indicates that permeabilities may be as low as 7×10^{-6} cm/sec. Low-permeability deposits may be acting to limit communication between bedrock aquifer in the mine area and more permeable portions of the alluvial aquifer found further to the east, thus facilitating the formation of a ground water divide near the bedrock/alluvium interface.

Based on relative permeabilities, the movement of ground water is expected to be more rapid in alluvium in the central Chuckwalla Valley area than in fractured bedrock. As indicated in the section describing the Occurrence and Movement of Ground Water, flow rates of 300 feet per year could occur, although the movement of a contaminant plume would be somewhat slower due to the adsorption of contaminants on the surface of sediment grains. Along with adsorption and diffusion, the dilution of leachate-affected water by ground water already residing in the alluvium would tend to reduce the concentration of contaminants.

The escape of significant quantities of leachate from the landfill is considered unlikely, since the landfill will be lined with a layer of low-permeability soil as required by the appropriate permitting agency. In addition, leachate which accumulates at the base of the landfill will be collected and pumped out of the landfill for treatment and disposal.

If escape of leachate from the facility occurred, it could impact ground water; however, the travel of leachate-affected ground water is expected to be towards the East Pit pond area, and not towards the alluvial aquifer in the Chuckwalla Valley. This movement is expected to be relatively slow. Presently available data on the permeability of fractured bedrock, and on the ground water gradient, indicate that movement of leachate-affected ground water would be at a rate of no more than approximately 100 feet per year.

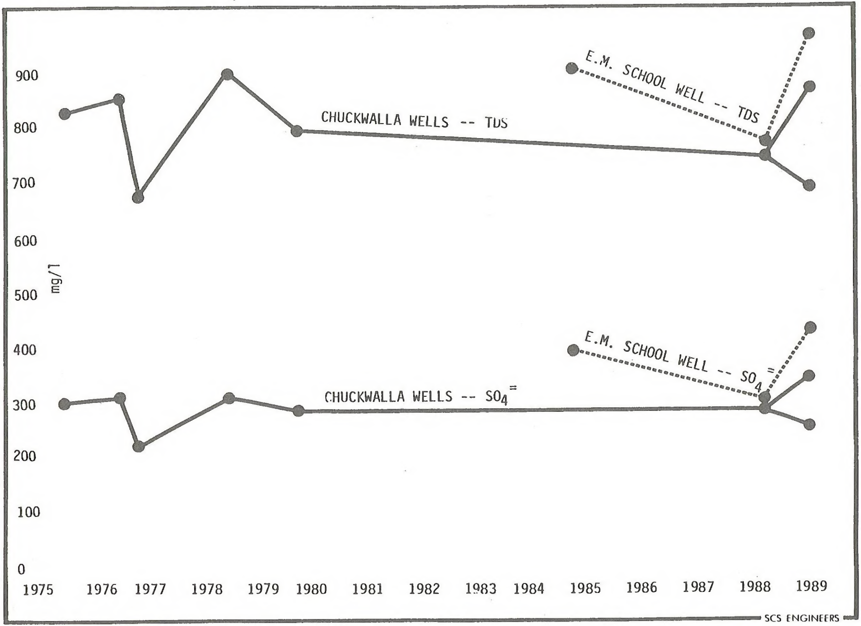


Figure 13. Change in Concentration of Total Dissolved Solids (TDS) and Sulfate Ion With Time, Chuckwalla Wells and Eagle Mountain School Well.

The impact of landfill leachate on usable ground water is not expected to be significant because of the relatively small quantities of leachate that will be generated in this landfill, because of planned engineering controls such as a low-permeability liner and leachate collection system, because of the isolation of the site from areas of beneficially used ground water, and because of the limited communication between bedrock and alluvial ground water.

CUMULATIVE IMPACTS

Surface Water Quality

Cumulative impacts on surface water quality are not expected from this project.

Ground Water Quality

Cumulative impacts of the proposed landfill and anticipated mining operations on ground water quality are not considered to pose a significant threat to ground water quality.

Iron mining is one of the mining options being considered. Wet processing of ore will probably not take place; however, if it did, disposal of mine process water could conceivably affect ground water in the Chuckwalla Valley. Water quality data indicate that no significant change in water quality in the wells nearest the mine (Chuckwalla and Eagle Mountain School Wells) occurred during and following the previous years of mine operation. Figure 13 indicates in graphical form the changes in TDS and sulfate concentrations during this period. No discernable trend of change in water quality can be seen from these graphs. No significant cumulative impacts to water quality are expected from possible future iron mining activities.

Future landfill leachate management operations may involve construction of a leachate pretreatment plant. Effluent from the pretreatment plant would be conveyed to the existing Eagle Mountain wastewater treatment works. No cumulative impact to water quality is expected to occur from this aspect of operations, because the effluent from the pretreatment plant is not expected to be lower quality water than that presently being delivered to the Eagle Mountain wastewater treatment works.

MITIGATION MEASURES

Measures Incorporated into Project Design

Ground Water Monitoring--

To provide ongoing ground water monitoring during landfill operations and following landfill closure, a system of detection monitoring wells will be installed. This system will be designed to detect movement of contaminants from the area of the landfill in ground water. For this purpose, wells are generally placed downgradient close to the margin of the landfill. Water quality at these points of compliance is compared to background water quality. California Administrative Code, Title 23, Subchapter 15, regulations specify that a sufficient number of wells be installed to monitor background water quality and water quality at points of compliance. The wells must be logged by a geologist, and must be able to accurately monitor water level and chemical indicator parameters. Prior to installation of the ground water monitoring system, approval of the proposed program will be obtained from the RWQCB.

At present, three dedicated monitoring wells (MW-1, MW-2, and MW-3) exist in close proximity to the area proposed for landfilling. These wells will be supplemented by other ground water monitoring wells located downgradient of the landfill. Due to the size and configuration of the landfill, it is anticipated that a minimum of four to six downgradient wells will initially be monitored. In addition, at least one ground water monitoring well will be constructed upgradient of the landfill, so that water quality can be measured in an area beyond the potential effect of the landfill. The location of wells will be determined during the permitting stages of landfill design, subject to approval by the RWQCB.

Construction methods and details of the ground water monitoring wells will be approved by the RWQCB. Alluvial wells will probably be drilled using air or mud rotary methods. The bedrock wells will probably be drilled using air rotary methods in conjunction with a downhole percussive tool. Samples will be collected during drilling to provide information on lithology. A log of each well will be prepared by an on-site geologist working under the direct supervision of a geologist registered in the State of California. The well log will include information on well location, driller, drilling equipment, borehole diameter, depth, dates and times that various operations were performed, and geological observations.

The wells will be sampled and analyses regularly performed as specified by the RWQCB in their Waste Discharge Requirements. It is anticipated that laboratory analyses will consist of a number of tests selected from among the ones being performed for background ground water monitoring (described in the subsection on Background Ground Water Quality Monitoring).

Landfill Liner--

Landfill design will incorporate a liner consisting of recompacted tailing material from the fine tailing basins located on site. This material is primarily fine-grained material consisting of silt- and clay-sized particles with some sand-sized particles.

When compacted to 90 percent of maximum density, the on-site fine tailing material displays permeabilities ranging from 8.8×10^{-6} to 3.0×10^{-7} cm/sec. The addition of small quantities of sodium bentonite clay to the material has been found to decrease permeability by one to two orders of magnitude. Quality control testing will be performed during liner placement to ensure that only material with permeabilities acceptable to the RWQCB is used for liner. If necessary, bentonite or other material may be added to decrease natural permeability. Other physical properties of the tailings material are consistent with its use as a landfill liner, and no hazardous concentrations of metals or other substances were found to be contained in the material. Additional laboratory test data on the tailings pond material are found in this appendix.

Drainage Control--

Landfill design will include a drainage control system which will prevent run-on of surface water. The drainage system is fully described in the section on

Drainage. Minimization of run-on will decrease the water available for leachate production in the landfill, and will therefore reduce the opportunity for leachate migration from the landfill.

Leachate Collection System--

Landfill design will include a leachate collection system to allow removal of accumulated leachate from the lower portions of the refuse. By minimizing the quantity of leachate which accumulates in the landfill, the operator will minimize the opportunity for leakage of significant quantities of leachate.

Landfill Cover--

The entry of moisture to the refuse will be further inhibited by a final cover which includes a low-permeability layer placed over completed sections of the landfill. Final cover design specified in Subchapter 15 regulations consists of several layers of soil designed and constructed to minimize percolation of precipitation moisture through refuse. The lowest layer consists of a minimum of 2 feet of compacted foundation material; above this, a minimum 1-foot-thick layer of compacted soil is emplaced, with a permeability equal to or less than the landfill liner; the top of the final cover, a layer consisting of not less than 1 foot of clean soil, is designed to support vegetative growth.

An intermediate cover will be placed over those sections of the landfill which are expected to remain inactive for extended periods of time. Intermediate cover will be designed and constructed to minimize the percolation of precipitation through refuse.

LFG Control System--

Migrating LFG which contains volatile organic compounds can be a significant source of ground water contamination, if uncontrolled. In addition, carbon dioxide in LFG can dissolve in ground water and result in lowered pH which could, in turn, mobilize metal ions.

These sources of potential ground water degradation will be controlled by recovering LFG from the landfill. By preventing the buildup of LFG, the driving force behind gas migration will be removed. The LFG control and recovery systems are described more fully in Section II.A and Appendix A. Additional controls on LFG migration will be provided by the low-permeability landfill liner, which will minimize lateral migration of gas.

Control of Windblown Litter--

The potential for windblown litter to enter the Colorado River Aqueduct through its uncovered portions, and impact the quality of water in the aqueduct, will be mitigated by a litter control program which consists of the following:

- Incorporation of refuse into the working face of the landfill as rapidly as practicable to reduce the opportunity for the spread of litter.

- Regular litter pickup by landfill personnel to control the spread of litter within the landfill, and to prevent litter from spreading beyond the project boundaries.

Phasing--

It is possible that if the lowest portion of the landfill were to extend below the projected water table, ground water pressure at significant head on the outside of the liner could cause liner failure and subsequent entry of ground water into the landfill. As a mitigation measure to prevent this possibility, refuse will not be placed at a level at or below the highest historically known ground water level.

The lowest point in the present East Pit excavation exists at an elevation of approximately 705 feet MSL. When the central portion of the East Pit is scheduled to be filled, this level will be raised substantially by filling the lowest portion of the East Pit with coarse tailing material. The phasing plan for the landfill avoids disposal in the deepest part of the East Pit for some 60 to 65 years. Prior to initiating operations in this part of the pit, the bottom of the pit will be raised substantially by filling this area with coarse tailing or other suitable material to an elevation higher than the highest historically known ground water level. This separation between historic ground water levels and the lowest elevation where landfilling will occur, and installation of a leachate control and monitoring system will mitigate the potential for liner failure to levels of insignificance. Between the start of operations and the filling of central portions of the East Pit, additional studies to determine ground water hydrology, movement characteristics, and other parameters will be performed; prior to the filling of these portions of the pit, measures will be taken (such as installation of dewatering wells) to maintain the westward ground water gradient in the eastern portion of the pit.

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APPENDIX

BORING LOG

SCS
ENGINEERS
Environmental Engineers

3711 Long Beach Blvd.
Ninth Floor
Long Beach, CA
90807 - 3315

(213) 426 - 9544
FAX (213) 427 - 0805

PROJECT: EAGLE MOUNTAIN

LOCATION :

JOB NUMBER : 0187073.03

GEOLOGIST / ENGINEER : B. GARBACCIO / K . LISTER

DRILLER : PIONEER

DRILL RIG : FAILING F 8

DRILLING METHOD : MUD ROTARY

HOLE / WELL # : M W - 1

DIAMETER : 10 "

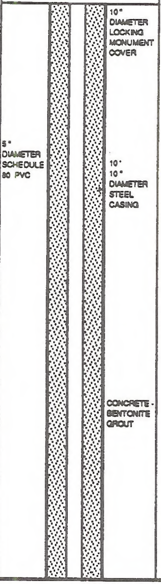
TOTAL DEPTH : 400 '

DATE STARTED : APRIL 27, 1989

DATE COMPLETED : MAY 16, 1989

SAMPLING DEVICE : ________

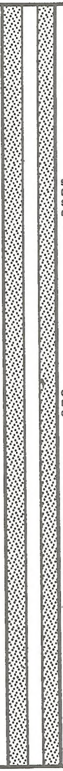
PAGE : 1 OF 7



DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
0						DIRECT AIR ROTARY USED TO SET STEEL CASING
1						
2						
3						
4						LIGHT TAN SILTY FINE TO VERY COARSE SAND WITH 25% GRAVEL TO 2" (BOULDERS > 1 FOOT OBSERVED IN BOREHOLE) GRAVEL IS MOSTLY GRANITE WITH EPIDOTE, VEIN QUARTZ AND MINOR MAGNETITE - HEMATITE ORE
5						
6						
7						
8						
9						
10						
11						
12						
13						MUD ROTARY MUD REMOVES FINES
14						
15						
16						
17						
18						
19						
20						

BORING LOG

PROJECT : EAGLE MOUNTAIN
HOLE / WELL # : MW-1
JOB NUMBER: 0187073.03
PAGE : 2 OF 7

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
25						
30						
35						
40		5" DIAMETER SCHEDULE 80 PVC				
45						
50						
55		CONCRETE - BENTONITE GROUT				
60						60' - 80' LESS GRAVEL THAN UPPER SECTION
65						
70						
75						
80						CUTTINGS ARE MEDIUM TO COARSE SAND SIZE, SUBANGULAR, 50% QUARTZ, 40% FELDSPAR, 10% DARK GRAINS
85						

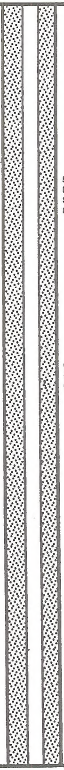
BORING LOG

PROJECT: EAGLE MOUNTAIN

HOLE / WELL #: MW-1

JOB NUMBER: 0187073.03

PAGE: 3 OF 7

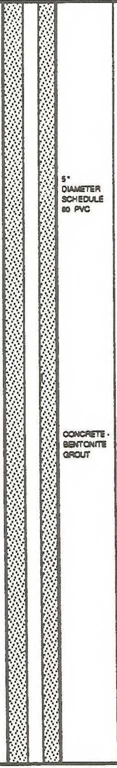


DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
90						
95						SAME AS ABOVE 40% QUARTZ, 40% FELDSPAR, 20% DARK COLORED GRAINS
100						
105		5" DIAMETER SCHEDULE 80 PVC				
110						CUTTINGS ARE COARSE SAND SIZED 50% QUARTZ, 40% FELDSPAR, 10% DARK COLORED GRAINS
115						
120		CONCRETE - BENTONITE GROUT				45% QUARTZ, 40% FELDSPAR, 15% DARK COLORED GRAINS
125						
130						
135						
140						
145						50% QUARTZ, 35% FELDSPAR, 15% DARK COLORED GRAINS
150						

BORING LOG

PROJECT : EAGLE MOUNTAIN
JOB NUMBER: 0187073.03

HOLE / WELL # : MW - 1
PAGE : 4 OF 7



DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
155						
160						45% QUARTZ, 40% FELDSPAR, 15% DARK COLORED GRAINS
165						
170		5" DIAMETER SCHEDULE 80 PVC				
175						
180						
185						
190		CONCRETE - BENTONITE GROUT				190' - 245' SILT - CLAY, VERY LITTLE SAND IN CUTTINGS, SLOW DRILLING
195						
200						
205						
210						
215						

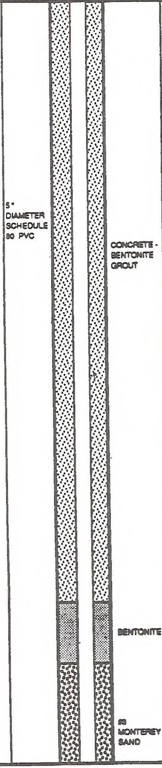
BORING LOG

PROJECT: EAGLE MOUNTAIN

HOLE / WELL #: MW-1

JOB NUMBER: 0187073.03

PAGE: 5 OF 7

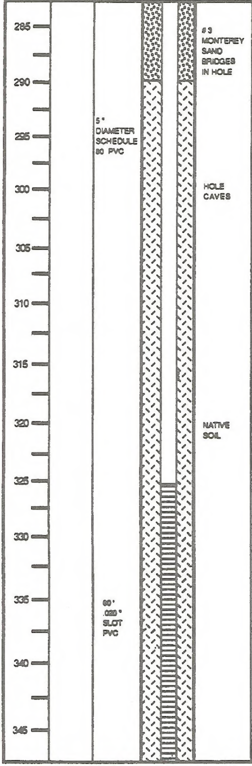


DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
220						
225						
230						
235		5" DIAMETER SCHEDULE 80 PVC				
240		CONCRETE - BENTONITE GROUT				
245						COARSE SAND SIZED GRAINS, SURROUNDED TO ANGULAR, 50% QUARTZ; 25% FELDSPAR, 25% EPIDOTE, IRON ORE, GRANITE FRAGMENTS
250						
255						
260						260' COBBLES - BOULDERS
265						264' COBBLES - BOULDERS
270		BENTONITE				
275						
280		#3 MONTEREY SAND				

BORING LOG

PROJECT : EAGLE MOUNTAIN
JOB NUMBER: 0187073.03

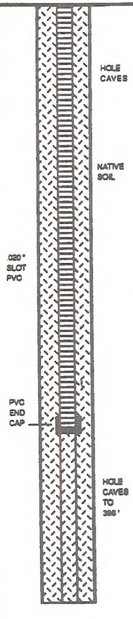
HOLE / WELL # : MW-1
PAGE : 6 OF 7

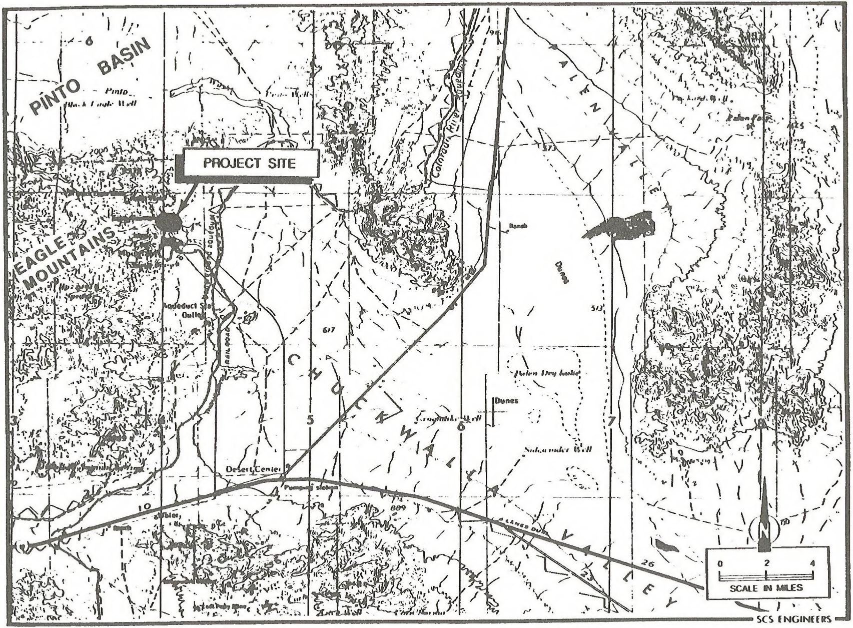


DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
						284' - 290' COBBLES - BOULDERS
						COARSE SAND SIZED CUTTINGS, 30% MAFIC ROCK FRAGMENTS, 30% QUARTZ, 30% FELDSPAR, 10% EPIDOTE
						318' COBBLES - BOULDERS
						328' - 330' COBBLES - BOULDERS

BORING LOG

PROJECT : EAGLE MOUNTAIN
HOLE / WELL # : MW - 1
JOB NUMBER: 0187073.03
PAGE : 7 OF 7

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
350		 HOLE CAVES NATIVE SOIL .020" SLOT PVC PVC END CAP HOLE CAVES TO 396'				WATER AT 350' ? MUD THINS OUT
355						
360						
365						
370						
375						374' - 377' SILT - CLAY VERY LITTLE SAND IN CUTTINGS, SLOW DRILLING
380						380' COBBLES - BOULDERS
385						COARSE SAND SIZED CUTTINGS, 40% QUARTZ, 30% FELDSPAR, 30% IRON ORE, EPIDOTE, MAFIC ROCK FRAGMENTS
390						
395						396' - 400' ANGULAR CHIPS OF IRON ORE TO 0.2"
400						T D = 400'



SCS ENGINEERS

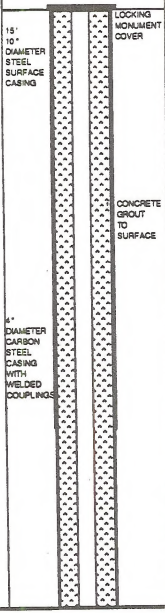
BORING LOG

SCS
ENGINEERS
Environmental Consultants

3711 Long Beach Blvd.
Ninth Floor
Long Beach, CA
90807 - 3315

(213) 426 - 9544
FAX (213) 427 - 0806

PROJECT: EAGLE MOUNTAIN
HOLE / WELL # : BH 4 / MW 2
LOCATION :
DIAMETER : 10 "
JOB NUMBER : 0187073.09
TOTAL DEPTH : 455 '
GEOLOGIST / ENGINEER : B. GARBACCIO
DATE STARTED : MARCH 26, 1990
DRILLER : BEYLIK
DATE COMPLETED : APRIL 4, 1990
DRILL RIG : PORTADRILL
SAMPLING DEVICE : CYCLONE
DRILLING METHOD : AIR ROTARY / MUD ROTARY
PAGE : 1 OF 9

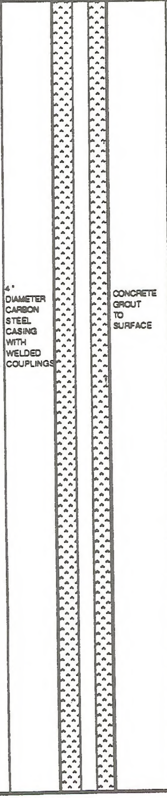

LOCKING MONUMENT COVER
15' 10" DIAMETER STEEL SURFACE CASING
CONCRETE GROUT TO SURFACE
4" DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
						START WITH AUGER TO SET SURFACE CASING
0						
1					SC - GC	0 - 15 ' - TAN - LIGHT BROWN CLAYEY SAND WITH GRAVEL, COBBLES AND BOULDERS (TO 6 " OBSERVED); SUBANGULAR TO SUBROUNDED; GRANITE, QUARTZITE, IRON ORE; DRY
2						
3						
4						
5						
6						
7						
8						
9						15 ' - 60 ' - DRILLED WITH 8 " DOWNHOLE HAMMER
10						
11						
12						CUTTINGS SEGREGATE IN CYCLONE
13						
14						
15					SP	SAND WITH GRAVEL TO 1 " OBSERVED, GRANITE WITH GREENSCHIST ALTERATION, CALC SILICATE ROCK, QUARTZITE, IRON ORE; NO CEMENT; SMALLER FRACTION IS MORE ANGULAR (FRAGMENTS OF LARGER ROCKS)
16						
17						
18						
19						
20						20 ' - SLIGHT CAVING

BORING

PROJECT : EAGLE MOUNTAIN
JOB NUMBER: 0187073.09

HOLE / WELL #: BH 4 / MW 2
PAGE : 2 OF 9


4" DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS
CONCRETE GROUT TO SURFACE

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
30						
40					SP	40' - FINES ARE LOST FROM CYCLONE COARSE SAND AND GRAVEL TO 2" OBSERVED, ANGULAR TO SUBROUNDED, GRANITE, IRON ORE, QUARTZITE; NO CEMENT OR CLAY OBSERVED 40' - 45' - BEGIN TO GET INTO CEMENTED ZONE, SEVERAL OF THE 0.1 - 0.2" GRAVEL GRAINS HAVE TAN CLAY COATINGS
50		4" DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS CONCRETE GROUT TO SURFACE				
60					SP - GW	60' - SWITCH TO 5" TRICONE BIT SAND AND GRAVEL TO 1" OBSERVED, ANGULAR TO SUBROUNDED, WHOLE CLASTS AND PIECES OF LARGER ROCKS, NO CLAY OR CEMENT; GRANITE, QUARTZITE, IRON ORE, PALE GREEN MARBLE, EPIDOTE; DRY
70						
						75' - TRACE CEMENT ON 0.1 - 0.2" GRAVEL
80						80' - 85' - SMALL PIECES OF GRAVEL ARE PARTLY COATED WITH CLAY CEMENT, LARGE QUANTITY OF FINE BROWN CLAY IN DUST FROM CYCLONE, COHESIVE WHEN WET; DRY

BORING

PROJECT: EAGLE MOUNTAIN
JOB NUMBER: 0187073.09

HOLE / WELL #: BH 4 / MW 2
PAGE: 3 OF 9

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
90						
						95' - GRAVEL HAS CLAY COATINGS, VERY LITTLE CLAY IN FINES
100					SP	100' + - COARSE SAND WITH <10% GRAVEL; FINES ARE NOT COHESIVE WHEN WET; GRAVEL HAS SAND GRAINS CEMENTED TO IT; DRY
110		4" DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS CONCRETE GROUT TO SURFACE			SP	105' - 110' + - SAND WITH 10 - 20% GRAVEL TO 1", VERY LITTLE FINES; GRAVEL HAS CLAY - CEMENT COATINGS, MOSTLY SUBROUNDED; GRANITE, FINE GRAINED CALC SILICATE ROCK, EPIDOTE, WHITE QUARTZITE, RED BROWN VESICULAR VOLCANIC OR DIKE ROCK
120						
					SP	125' - SAME AS ABOVE
130						
					SP	135' - VERY LITTLE FINES; GRAVEL IS MOSTLY ANGULAR QUARTZITE FROM LARGER ROCKS; SUBROUNDED GRANITE AND FINE GRAINED CALC SILICATE ROCK HAS CLAY - CEMENT COATINGS
140					SC	145' - 150' + - CLAY RICH ZONE WITH COARSE SAND AND GRAVEL TO 0.5"; CLAY IS LIGHT TAN (REDDISH BROWN WHEN WET), GRAVEL IS ANGULAR TO SUBROUNDED; GRANITE, QUARTZITE, BLACK FINE GRAINED MAFIC DIKE ROCK, IRON ORE; SOME PIECES HAVE CLAY COATINGS; DRY

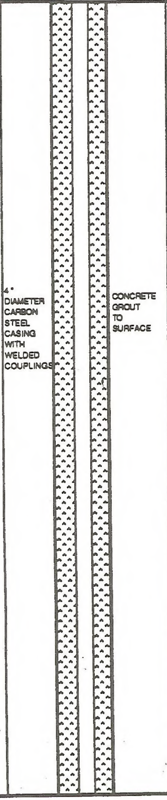
BORING

PROJECT : EAGLE MOUNTAIN

HOLE / WELL # : BH 4 / MW 2

JOB NUMBER: 0187073.09

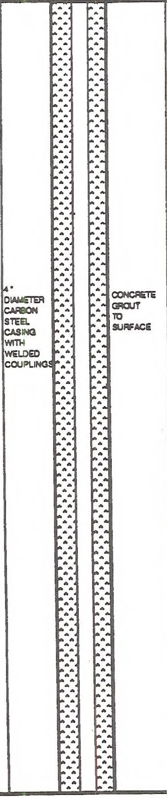
PAGE : 4 OF 9

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
150						
160						
					SC	165 ' + - CLAY RICH ZONE WITH SAND + 20% GRAVEL TO 0.5 " (MOSTLY < 0.3 ") OBSERVED, SUBANGULAR TO SUBROUNDED, CLAY COATINGS ON SOME PIECES; META- ARKOSE, GRANITE, QUARTZITE, IRON ORE; DRY
170		4 " DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS CONCRETE GROUT TO SURFACE				
180					SC - GC	180 ' - 185 ' + - CLAY RICH ZONE WITH COARSE TO VERY COARSE SAND AND GRAVEL; GRAVEL IS ANGULAR TO SUBROUNDED, GRANITE, QUARTZITE, IRON ORE; DRY
190					CL	190 ' - CLAY RICH ZONE WITH < 20% SAND AND GRAVEL, CLAY IS LIGHT TAN (MEDIUM PINK - BROWN WHEN WET), GRAVEL INCLUDES GRANITE, IRON ORE (MAGNETITE), DIORITE, QUARTZ, EPIDOTE
					SP - GW	195 ' - COARSE SAND AND GRAVEL TO 0.5 ", MOSTLY ANGULAR CHIPS OF GRANITE AND IRON ORE (MAGNETITE)
200						
					SC	205 ' - CLAY WITH SAND AND GRAVEL TO 0.5 " OBSERVED, ANGULAR TO SUBROUNDED, GRANITE, IRON ORE, QUARTZITE, EPIDOTE; DRY

BORING

PROJECT : EAGLE MOUNTAIN
JOB NUMBER: 0187073.09

HOLE / WELL # : BH 4 / MW 2
PAGE : 5 OF 9


COMPLETION DETAIL
4" DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS
CONCRETE GROUT TO SURFACE

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
210						
220						
					SP	225 ' - COARSE TO VERY COARSE SAND WITH APPROXIMATELY 10% GRAVEL, ROUNDED GRAINS; DRY
230		4" DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS CONCRETE GROUT TO SURFACE			SC - GC	230 ' - CLAY WITH SAND AND GRAVEL, GRANITE, MAFIC DIKE ROCK, QUARTZITE
240						
					SC - GC	245 ' - 280 ' - CLAY WITH SAND AND GRAVEL TO 0.7 " OBSERVED, GRAVEL IS ANGULAR TO SUBROUNDED, GRANITE, EPIDOTE, QUARTZITE, IRON ORE, WITH CLAY - CEMENT COATINGS, DRY
250						
260						

BORING

PROJECT : EAGLE MOUNTAIN

JOB NUMBER: 0187073.09

HOLE / WELL # : BH 4 / MW 2

PAGE : 6 OF 9

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
270						
280					SP - GW	280 ' - 300 ' - CLAY WITH COARSE - VERY COARSE SAND AND GRAVEL TO 0.7 " OBSERVED, MOSTLY ANGULAR CHIPS OF QUARTZITE AND GRANITE; SUBROUNDED - ROUNDED IRON ORE, META-ARKOSE, GRANITE; DRY
290		4 DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS CONCRETE GROUT TO SURFACE				
300						
310					SP	310 ' - CLAY WITH SAND AND <10% GRAVEL TO 0.5 " OBSERVED, SUBROUNDED, DIORITE, FINE GRAINED CALC SILICATE ROCK, QUARTZITE, MAFIC DIKE ROCK; AGGREGATES OF CEMENTED SAND; DRY
320						
					SP - GW	325 ' - CLAY WITH SAND AND 10 - 20% GRAVEL TO 0.5 " OBSERVED, MOSTLY ANGULAR TO SUBANGULAR, GRANITE, QUARTZITE, FINE GRAINED CALC SILICATE ROCK; SOME GRAINS HAVE CLAY COATINGS; DRY

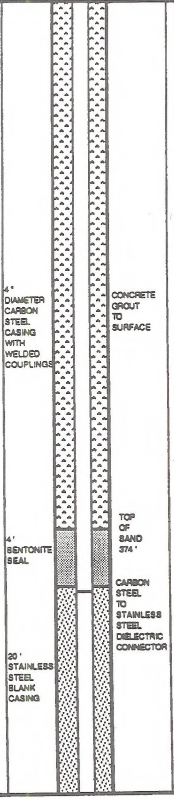
BORING

PROJECT : EAGLE MOUNTAIN

JOB NUMBER: 0187073.09

HOLE / WELL # : BH 4 / MW 2

PAGE : 7 OF 9


4" DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS
CONCRETE GROUT TO SURFACE
TOP OF SAND 374'
4' BENTONITE SEAL
CARBON STEEL TO STAINLESS STEEL DIELECTRIC CONNECTOR
20' STAINLESS STEEL BLANK CASING

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
330					SC	330 ' - CLAY RICH ZONE SAND WITH GRAVEL TO 1 " OBSERVED, SUBANGULAR, GRANITE, DRY
340					CL	340 ' - 345 ' - CLAY WITH APPROXIMATELY 10% SAND, CLAY HAS A TRACE OF MOISTURE
						346 ' - 347 ' - TRACE MOISTURE IN CLAY, GRAVEL HAS MOIST COATINGS
						348 ' - RED IRON ORE IN CUTTINGS
350						
360						
					SC	365 ' - CLAY WITH SAND
370						370 ' - DRY
						375 ' - DRY
380					GC	380 ' - CLAY WITH GRAVEL TO 0.5 " OBSERVED, MOSTLY FINE GRAINED CAL SILICATE ROCK, CLAY IS VERY SLIGHTLY MOIST

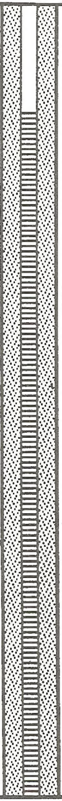
BORING

PROJECT : EAGLE MOUNTAIN

JOB NUMBER: 0187073.09

HOLE / WELL # : BH 4 / MW 2

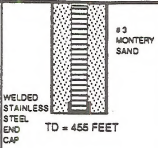
PAGE : 8 OF 9



DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
390			4-13-90 WATER LEVEL AFTER DEVELOP-MENT = 390'		SP	390' - 395' - COARSE SAND AND GRAVEL WITH AGGREGATES OF SAND CEMENTED TOGETHER
400			3-29-90 WATER LEVEL RISES TO 400' OVERNIGHT			400' - LET HOLE STAND OPEN FOR 15 MINUTES - NO WATER
					SP	405' - COARSE SAND WITH MINOR GRAVEL, GRANITE AND IRON ORE (MAGNETITE)
410		61' 0.20" SLOT STAINLESS STEEL SCREEN 394' - 455' #3 MONTERY SAND				
420						INJECT WATER
					SW	425' - 430' - FINE TO COARSE SAND (NOT TYPICAL) WITH <10% GRAVEL TO 0.3" OBSERVED, ANGULAR, CLEAN - NO CEMENT, MOSTLY GRANITE WITH TRACE MANGNETIC IRON ORE
430		FLUSH THREADED COUPLINGS				
						435' - 440' - DRILL THROUGH BOULDERS OF IRON ORE, CUTTINGS TURN RED
440					SP	440' - COARSE SAND GRANITE, GLASSY QUARTZ, MAGNETITE - HEMATITE IRON ORE
						TD = 440' WITH AIR ROTARY

BORING

PROJECT: EAGLE MOUNTAIN
HOLE / WELL #: BH 4 / MW 2
JOB NUMBER: 0187073.09
PAGE: 9 OF 9

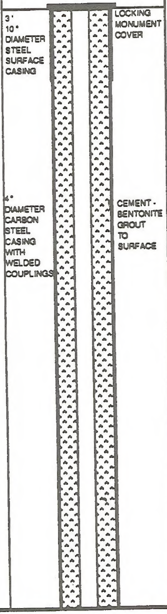
DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
450					SP	450' - SAND AND GRAVEL TO 0.5" OBSERVED, SUBROUNDED, MOSTLY RED BROWN META-ARKOSE
					SP	455' - MOSTLY SAND WITH CHIPS OF GRANITE, GLASSY WHITE QUARTZ, HEMATITE - MAGNETITE IRON ORE
460						HOLE IS ENLARGED WITH A 10" TRICONE BIT AND MUD ROTARY DRILLING TD WITH 10" = 455 FEET

BORING LOG

SCS ENGINEERS
Environmental Consultants
3711 Long Beach Blvd.
Ninth Floor
Long Beach, CA
90807 - 3315
(213) 426 - 9544
FAX (213) 427 - 0826

PROJECT: EAGLE MOUNTAIN
LOCATION :
JOB NUMBER : 0187073.09
GEOLOGIST / ENGINEER : B. GARBACCIO
DRILLER : BEYLIK
DRILL RIG : PORTADRILL
DRILLING METHOD : REVERSE CIRCULATION AIR ROTARY WITH DOWNHOLE HAMMER

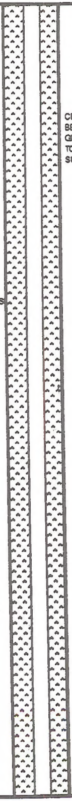
HOLE / WELL # : BH 5 / MW 3
DIAMETER : 8 "
TOTAL DEPTH : 380 '
DATE STARTED : APRIL 4, 1990
DATE COMPLETED : APRIL 10, 1990
SAMPLING DEVICE : CYCLONE
PAGE : 1 OF 4

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
0		 LOCKING MONUMENT COVER 3' 10" DIAMETER STEEL SURFACE CASING 4" DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS CEMENT - BENTONITE GROUT TO SURFACE				0 - 1 ' - CLAY AND GRAVEL, MINE DEBRIS
1						
2						
3						
4						TOP 5 ' - DRILLED WITH TRICONE TO SET SURFACE CASING
5						
6						
7						
8						
9						1 - 28 ' - MEDIUM GRAY GREEN FINE GRAINED CALC SILICATE ROCK
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

BORING

PROJECT : EAGLE MOUNTAIN
JOB NUMBER: 0187073.09

HOLE / WELL #: BH 5 / MW 3
PAGE : 2 OF 4

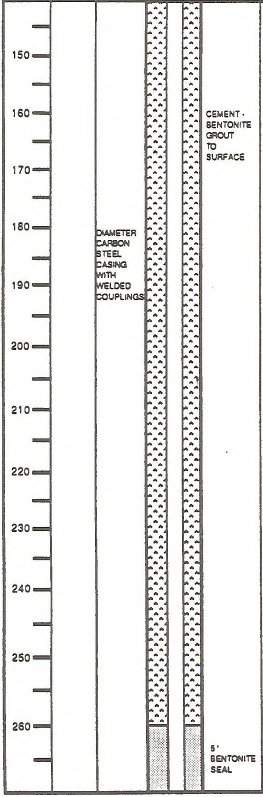


DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
						28 ' - MEDIUM - DARK GREEN FINE GRAINED CALC SILICATE ROCK WITH APPROXIMATELY 50 % DARK GRAY - BLACK FINE GRAINED MAFIC DIKE ROCK, TRACE MAGNETIC ROCK
30						
40		CEMENT - BENTONITE GROUT TO SURFACE				32' - 65 ' - LIGHT GREEN FINE GRAINED CALC SILICATE ROCK WITH 5 - 10 % DARK GRAY - BLACK MAFIC DIKE ROCK
50						
60		4" DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS				65 ' - 80 ' - LIGHT - MEDIUM GREEN FINE GRAINED CALC SILICATE ROCK WITH APPROXIMATELY 25 % DARK GRAY - BLACK FINE GRAINED MAFIC DIKE ROCK
70						
80						80 ' - 87 ' - MEDIUM GREEN FINE GRAINED CALC SILICATE ROCK WITH MEDIUM BROWN COARSE GRAINED FELDSPAR
90						87 ' - 100 ' + - MEDIUM REDDISH BROWN HEMATITE IRON ORE (MAGNETIC)
100						100 ' - CUTTINGS CONTAIN APPROXIMATELY 10 % TREMOLITE
110						
120						
130						130 ' - SAME AS ABOVE , WITH TRACES OF WHITE - CREAM COLORED MARBLE 135 ' - SAME AS ABOVE, TRACES OF PYRITE
140						

BORING

PROJECT : EAGLE MOUNTAIN
JOB NUMBER: 0187073.09

HOLE / WELL # : BH 5 / MW 3
PAGE : 3 OF 4

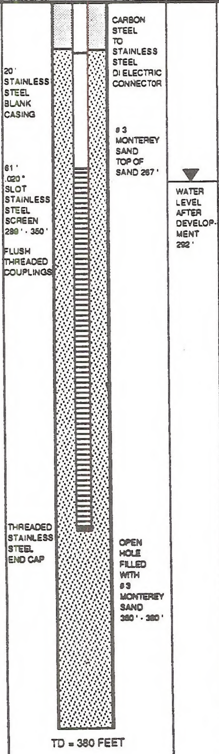

150
160
170
180
190
200
210
220
230
240
250
260
CEMENT - BENTONITE GROUT TO SURFACE
DIAMETER CARBON STEEL CASING WITH WELDED COUPLINGS
5' BENTONITE SEAL

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
						148 ' - MEDIUM BROWN HEMATITE IRON ORE WITH TRACES OF PYRITE AND APPROXIMATELY 50 % MEDIUM GREEN FINE GRAINED CALC SILICATE ROCK
						160 ' - MEDIUM - DARK GREEN FINE GRAINED CALC SILICATE ROCK WITH TRACES OF WHITE FIBROUS TREMOLITE
						165' - 185 ' - MEDIUM GREEN FINE GRAINED CALC SILICATE ROCK
						185 ' - MEDIUM GREEN FINE GRAINED CALC SILICATE ROCK WITH 10 - 20 % RED BROWN HEMATITE IRON ORE (MAGNETIC) AND TRACES OF EPIDOTE
						200 ' - MEDIUM GREEN FINE GRAINED CALC SILICATE ROCK WITH APPROXIMATELY 5 % LIGHT OLIVE GREEN QUARTZITE
						210 ' - 250 ' - MEDIUM - DARK GRAY GREEN QUARTZITE
						250 ' - 260 ' + - MEDIUM GREEN FINE GRAINED CALC SILICATE ROCK WITH APPROXIMATELY 10% QUARTZ VEIN OR GRANITE-PEGMATITE MATERIAL AND TRACE HEMATITE IRON ORE

BORING

PROJECT : EAGLE MOUNTAIN
JOB NUMBER: 0187073.09

HOLE / WELL # : BH 5 / MW 3
PAGE : 4 OF 4



CARBON STEEL TO STAINLESS STEEL DI ELECTRIC CONNECTOR
20 ' STAINLESS STEEL BLANK CASING
# 3 MONTEREY SAND TOP OF SAND 267 '
61 ' .020 " SLOT STAINLESS STEEL SCREEN 289 ' - 350 '
FLUSH THREADED COUPLINGS
WATER LEVEL AFTER DEVELOP-MENT 292 '
THREADED STAINLESS STEEL END CAP
OPEN HOLE FILLED WITH # 3 MONTEREY SAND 350 ' - 380 '
TD = 380 FEET

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
270						270 ' - MIXED DARK GREEN FINE GRAINED CALC SILICATE ROCK AND MEDIUM BROWN QUARTZITE
280						280 ' - DARK GREEN FINE GRAINED CALC SILICATE ROCK WITH IRON STAINED SURFACES AND APPROXIMATELY 20 % GRANITE
290						290 ' - MEDIUM RED BROWN AND GRAY META - ARKOSE WITH 5 - 10 % GRANITE AND TRACE IRON ORE
300						322 - 325 ' WET CUTTINGS FIRST OBSERVED
310						295 ' - 370 ' - MEDIUM RED BROWN AND GRAY META - ARKOSE WITH 20 % MEDIUM GREEN FINE GRAINED CALC SILICATE ROCK AND TRACE QUARTZ. CALC SILICATE ROCK IS IRON STAINED
320						
330						
340						345 ' - 350 ' - TRACES OF GRANITE AND QUARTZITE
350						
360						
370						
380						380 ' - MEDIUM - DARK GREEN FINE GRAINED CALC SILICATE ROCK

BORING LOG

SCS ENGINEERS
Environmental Engineers
3711 Long Beach Blvd.
Ninth Floor
Long Beach, CA
90807 - 3319
(213) 426 - 9544
FAX (213) 427 - 0805

PROJECT: EAGLE MOUNTAIN
LOCATION:
JOB NUMBER: 0187073.03
GEOLOGIST / ENGINEER: B. GARBACCIO / K. LISTER
DRILLER: PIONEER
DRILL RIG: FAILING F 8
DRILLING METHOD: AIR ROTARY

HOLE / WELL #: B H - 1
DIAMETER: 10"
TOTAL DEPTH: 230'
DATE STARTED: APRIL 4, 1989
DATE COMPLETED: APRIL 25, 1989
SAMPLING DEVICE: ———
PAGE: 1 OF 5

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
0						HOLE STARTED IN ALLUVIUM
1						LIGHT TAN SILTY SAND WITH POORLY SORTED GRAVEL TO BOULDER SIZED ROCKS
2						
3						
4						
5						
6						
7						
8						8' BEDROCK CONTACT DARK BLUE GREEN GRANITE WITH GREENSCHIST GRADE ALTERATION (CHLORITE + EPIDOTE)
9						
10						
11						
12						
13						
14						
15						DARK BLUE GREEN GRANITE - SAME AS ABOVE
16						
17						
18						
19						
20						

BORING LOG

PROJECT: EAGLE MOUNTAIN

JOB NUMBER: 0187073.03

HOLE / WELL #: B H - 1

PAGE : 2 OF 5

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
25						
30						
35						
40						
45						DARK GREEN PORPHYRITIC GRANITE WITH EPIDOTE VEINS
50						
55						
60						
65						
70						GRANITE SAME AS ABOVE
75						
80						
85						

BORING LOG

PROJECT : EAGLE MOUNTAIN

JOB NUMBER: 0187073.03

HOLE / WELL # : B H - 1

PAGE : 3 OF 5

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
90						
95						DARK GREEN GRANITE WITH GREENSCHIST GRADE ALTERATION; FINE GRAINED MAFIC ROCK
100						
105						
110						
115						
120						
125						
130						
135						
140						
145						
150						DARK GREEN GRANITE WITH GREENSCHIST GRADE ALTERATION AND SOME PALE PINK POTASSIUM FELDSPAR CRYSTALS TO 0.5 ", EPIDOTE VEINS

BORING LOG

PROJECT : EAGLE MOUNTAIN
JOB NUMBER: 0187073.03

HOLE / WELL # : B H - 1
PAGE : 4 OF 5

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
155						
160						
165						
170						
175						
180						180' SWITCH TO 6" PERCUSSION HAMMER
185						
190						
195						195 - 200' VERY EASY DRILLING, MAY BE A HIGHLY FRACTURED ZONE
200						
205						
210						GRANITE WITH GREENSCHIST GRADE ALTERATION AND EPIDOTE VEINS
215						CUTTINGS ARE COARSE SAND SIZE; QUARTZ, FELDSPAR, EPIDOTE, CHLORITE

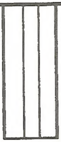
BORING LOG

PROJECT : EAGLE MOUNTAIN

JOB NUMBER: 0187073.03

HOLE / WELL # : B H - 1

PAGE : 5 OF 5

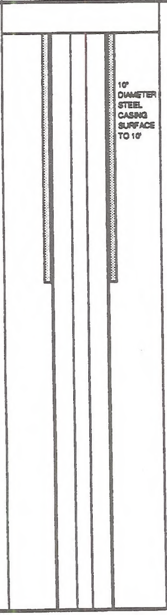
DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
220						
225						
230						TD = 230 ' NO WATER
235						
240						
245						
250						
255						
260						
265						
270						
275						
280						

BORING LOG

SCS ENGINEERS
Environmental Engineers
3711 Long Beach Blvd.
Ninth Floor
Long Beach, CA
90807 - 3315
(213) 426 - 9544
FAX (213) 427 - 0805

PROJECT: EAGLE MOUNTAIN
LOCATION :
JOB NUMBER : 0187073.03
GEOLOGIST / ENGINEER : B. GARBACCIO / K. LISTER
DRILLER : LAYNE ENVIRONMENTAL
DRILL RIG : INGERSOLL - RAND
DRILLING METHOD : REVERSE CIRCULATION AIR ROTARY

HOLE / WELL # : BH-3
DIAMETER : 6"
TOTAL DEPTH : 400'
DATE STARTED : MAY 31, 1989
DATE COMPLETED : JUNE 3, 1989
SAMPLING DEVICE : ———
PAGE : 1 OF 7

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20						ALLUVIUM LIGHT TAN SILTY SAND WITH POORLY SORTED GRAVEL TO LARGE BOULDERS, MOSTLY GRANITE

BORING LOG

PROJECT : EAGLE MOUNTAIN

HOLE / WELL # : B H - 1

JOB NUMBER: 0187073.03

PAGE : 2 OF 5

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
25						26' CONTACT OF ALLUVIUM AND GRANITE BEDROCK
30						
35						DARK GREEN AND WHITE GRANITE WITH GREENSCHIST GRADE ALTERATION (CHLORITE + EPIDOTE)
40						CUTTINGS TO 2" ANGULAR
45						
50						
55						
60						SAME AS ABOVE
65						
70						
75						
80						
85						

BORING LOG

PROJECT : EAGLE MOUNTAIN

HOLE / WELL # : B H - 3

JOB NUMBER: 0187073.03

PAGE : 3 OF 7

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
90						
95						
100						DARK GREEN AND WHITE GRANITE WITH GREENSCHIST GRADE ALTERATION AND SOME PINK - GRAY POTASSIUM FELDSPAR CRYSTALS TO 0.5"
105						
110						
115						
120						SAME AS ABOVE
125						
130						
135						
140						
145						
150						SAME AS ABOVE

BORING LOG

PROJECT: EAGLE MOUNTAIN

HOLE / WELL #: B H - 3

JOB NUMBER: 0187073.03

PAGE: 4 OF 7

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
155						
160						
165						
170						
175						
180						
185						
190						
195						
200						
205						
210						
215						SAME AS ABOVE

BORING LOG

PROJECT : . EAGLE MOUNTAIN
JOB NUMBER: 0187073.03

HOLE / WELL # : B H - 3
PAGE : 5 OF 7

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
220						
225						
230						
235						
240						240' - 248' LIGHT TAN - PINK FINE GRAINED MARBLE
245						
250						248' - 250' LIGHT TO MEDIUM GREEN SERPENTINE WITH APPROXIMATELY 50% FIBROUS MATERIAL (ASBESTOS) 250' - 254' LIGHT TO MEDIUM YELLOW GREEN SERPENTINE; MASSIVE, NOT FIBROUS
255						
260						
265						MEDIUM GREEN AND PINK GRANITE WITH GREENSCHIST GRADE ALTERATION
270						273' - 276' OPEN SPACE ? LOSE AIR PRESSURE
275						
280						

BORING LOG

PROJECT : EAGLE MOUNTAIN
JOB NUMBER: 0187073.03

HOLE / WELL # : BH - 3
PAGE : 6 OF 7

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
285						DARK GREEN AND WHITE GRANITE WITH GREENSCHIST GRADE ALTERATION (CHLORITE)
290						
295						
300						DARK BLACK AND WHITE FINE GRAINED HORNBLENDE DIORITE (DIKE) AND LIGHT PINK - GRAY MAFIC POOR GRANITE
305						
310						
315						DARK BLACK AND WHITE HORNBLENDE - DIORITE
320						DARK BLACK FINE GRAINED FOLIATED MAFIC ROCK
325						
330						DARK GREEN AND WHITE GRANITE AND DIORITE WITH GREENSCHIST GRADE ALTERATION , AND CHLORITE ON SHEAR SURFACES
335						335' - 340' DARK BLACK AND WHITE HORNBLENDE DIORITE WITH LIGHT YELLOWISH QUARTZITE
340						
345						

BORING LOG

PROJECT EAGLE MOUNTAIN
JOB NUMBER: 0187073.03
HOLE / WELL #: B H - 3
PAGE : 7 OF 7

DEPTH (FEET)	SAMPLE	COMPLETION DETAIL	SAMPLE #	BLOW COUNTS / FOOT	USCS SYMBOL	DESCRIPTION
350						LIGHT GRAY AND PINK GRANITE WITH MINOR GREENSCHIST GRADE ALTERATION
355						350' - 358' LIGHT TAN - GRAY FELDSPATHIC QUARTZITE 358' DARK BLACK FINE GRAINED MAFIC ROCK
360						
365						
370						370' DARK GRAY TO BLACK FINE GRAINED, FOLIATED MAFIC ROCK
375						
380						380' DARK GREEN AND PINK GRANITE WITH GREENSCHIST GRADE ALTERATION (CHLORITE)
385						
390						
395						DARK GREEN - BLACK HORNBLENDE - DIORITE
400						T D = 400'

APPENDIX D

TRANSPORTATION IMPACT ANALYSIS
for the
PROPOSED EAGLE MOUNTAIN LANDFILL

submitted to

Recon
1276 Morena Boulevard
San Diego, CA 92110

submitted by

DKS Associates
2700 North Main Street, Suite 900
Santa Ana, CA 92701

July 1990
P89246x2

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1. Executive Summary

1. Executive Summary

This report describes the results of a study of the transportation related impacts of the proposed landfill at Eagle Mountain. Potential impacts would affect two major modes of transportation, rail transport and highway transport.

Unit trains carrying nothing but refuse would deliver 16,000 tons of refuse to the site daily, while an additional 4,000 tons would be delivered to the site each day by trucks. The highway system would also be affected by the additional traffic related directly to on-site operations, such as employees traveling to and from the site, service vehicles, deliveries, and other traffic.

The overall report describes existing conditions related to both types of transportation, details the projected future conditions in the year 1995 without the project, and describes the characteristics of the project related to transportation and the impacts of these characteristics on the surrounding transportation infrastructure in the study area.

EXISTING CONDITIONS

Existing conditions along both the proposed rail routes to the site and on roadways in the vicinity of the project are assessed in detail. The study area for the rail mode of transport includes all rail lines that may carry refuse from transfer stations to the site. A total of six representative transfer station locations are identified, in San Bernardino, Los Angeles, and Orange counties. The primary rail study area includes the rail lines that are traversed by all refuse trains destined for the landfill. All rail lines carrying only a portion of the train traffic are referred to as the secondary rail lines.

The rail route existing conditions analysis includes 268 miles of rail line, with more than 230 at-grade crossings identified along these lines. Data pertaining to usage of these crossings by both trains and highway vehicles were obtained at over 97% of these locations. The rail study area conditions were analyzed in detail at all at-grade crossings on the rail routes within 146 miles of the site (the primary segment), and at all at-grade crossings on secondary rail segments that would experience more than one-half hour of total vehicle delay (i.e., sum of delay of all vehicles waiting at the crossing while the train passes) when a train with the characteristics of the proposed refuse unit trains passed during the expected hours of unit train operation. A total of 95 at-grade crossings were targeted for detailed analysis, based on these criteria.

Existing train traffic volumes in the study area range from less than ten trains daily, at some crossings, to 50 trains per day in the vicinity of Colton. Train traffic along the primary segment ranges from 28 to 50 trains per day, with a median average of 35 trains per day along this segment. Train traffic along the secondary segments tended to be significantly lower, ranging from 2 to 35 trains per day.

The average daily volume of highway traffic using the at-grade crossings ranges from an average of 2,200 vehicles per day along the primary analysis segment to the highest average of 14,100 vehicles per day along one of the secondary analysis segments. The highest highway traffic volumes along the rail routes occur in Los Angeles and Orange counties.

Estimated at-grade crossing delays to highway vehicles resulting from the passage of a single refuse unit train were calculated for comparison to delays in later years, even though no unit trains of this type are currently operating. These delays ranged from very low (less than 0.01 total vehicle-hours of delay) at some primary rail segment locations to a high of 3.5 vehicle-hours of delay at Slauson Avenue in Huntington Park. Discussions with the California Public Utilities Commission suggest that delays at crossings on the Alameda Line serving the Port of Los Angeles are considered problematic. Delays at crossings in this part of the region typically ranged from one to three or more hours of cumulative delay per train.

Total delay to highway vehicles, using all of the at-grade crossings along the primary segment that would result from the passage of a single unit train under existing conditions, would be an estimated 0.94 vehicle-hour. The maximum average delay for an individual vehicle at any crossing would be approximately one to two minutes, while the cumulative delay at each individual crossing ranged between 0.01 and 0.17 hour.

A measure of the relative hazard at each at-grade crossing was also calculated for existing conditions. This hazard index was used to rank the various at-grade crossings studied in detail, and ranged from a low of 200 to a high of 222,900. The index is intended to indicate the relative rank of each crossing, or how hazardous each crossing is relative to the others assessed, rather than establishing an absolute measure of hazard or risk.

Crossings along the primary segment tended to be ranked lower than crossings along the secondary analysis segments, with the highest ranked crossing along the primary segment in Riverside County being Monroe Street in Indio, which was ranked 27th overall. The California Public Utilities Commission performs a similar calculation for informational purposes only. They are responsible for administering the federal Grade Crossing Improvement Program, and locations identified for improvements are determined based on discussion with local jurisdictions.

The assessment of existing conditions on roadways in the vicinity of the project focused on the interchanges of I-10 with Eagle Mountain Road and Desert Center Rice Road, and roadways leading to the site of the proposed landfill. This analysis included examination of roadway geometrics, particularly characteristics critical to the usage of the proposed truck route by large vehicles, and system operations, as determined by the analysis of roadway segment and intersection operations during the peak hour of traffic in the study area.

The existing geometrics of the proposed truck route, Eagle Mountain Road and the proposed Eagle Mountain Road Extension, are well-suited to use by the trucks that will be carrying refuse to the site. No evidence of deficient turning radii, horizontal and vertical alignment, or roadway widths was found along the existing portions of the proposed truck route.

Analysis of existing roadway segment and intersection operations indicates that current operations are excellent, with Level of Service "A" (LOS A) conditions for all traffic movements analyzed.

FUTURE CONDITIONS WITHOUT THE PROJECT

The proposed landfill will not be fully operational until 1995. Conditions within the transportation study areas will have changed, and it is necessary to project and analyze these changes to provide a valid baseline condition for estimation of project impacts.

The physical characteristics of the rail and highway system are not expected to undergo significant change between 1989 and 1995. The volume of rail traffic on the rail lines studied is also expected to remain fairly static during this period. Highway traffic volumes, however, are sensitive to the increasing urbanization of the region, and these increases will affect both the rail and highway analyses.

The annual growth rates for highway traffic using at-grade crossings and on roadways included in the highway impacts study area were projected based on regional data pertaining to projected trip-making characteristics in the vicinity of the at-grade crossing/roadway. Projected average annual growth in highway traffic ranged from a low of 0.7% per year in the East San Gabriel Valley to a high of 3.6% per year in the Chino Basin region of San Bernardino County. Growth in the Desert Center area is projected to be at a rate of 3.5% per year, or 23% growth between 1989 and 1995.

The overall at-grade crossing delays that would be caused by the passage of a single unit train of refuse would increase because of the increased number of vehicles impacted, although the average per vehicle delay would not change significantly. The total delay caused by such a train traversing the primary segment (Colton to Eagle Mountain) during the nighttime hours of operation anticipated would increase by 25%, from 0.94 vehicle-hours of delay to 1.16 vehicle-hours of delay.

Recalculation of the hazard indices for each of the at-grade crossings assessed under existing conditions indicates that the faster growth in the outlying areas of the region would result in somewhat higher positions in the overall ranking of at-grade crossings by hazard level. However, the highest ranked location in Riverside County, Monroe Street in Indio, would continue to be ranked 27th. The highest ranking locations, based on hazard index, would still be found in the more urbanized parts of the study area, Los Angeles and Orange counties.

The increased traffic volumes were also used to reassess roadway segment and intersection operating conditions. The results of this analysis indicate that LOS A conditions are projected for all traffic movements analyzed. This represents the best possible traffic conditions on the traffic engineer's scale.

FUTURE CONDITIONS WITH THE PROJECT

The project is expected to be capable of accepting up to six unit trains per day at the marshalling yard. An average of 4.7 shipments per day will be required when the project is operating at capacity (16,000 tons of waste by rail per day). These shipments will require twice as many trains per day, one to deliver the waste, and a second outgoing train returning empty containers to the transfer station.

Based on this description, an average of 9.4 trains per day will utilize the primary rail segment, with fewer trains on each of the secondary segments. The maximum number of vehicles delayed at any one crossing on the primary rail line segment would be 15 vehicles at Monroe Street. The average delay experienced by each of these vehicles is 0.8 minute (about 45 seconds). A total of 2.5 minutes would pass from the moment the gate started down until the moment the last car at the rear of the vehicle queue crossed the railroad tracks. The total delay at each individual crossing is projected to range from 0.01 to 0.21 hour per train, significantly less than the one to three hours of cumulative delay encountered at crossings identified by the California Public Utilities Commission as experiencing delay problems. Based on this fact, there is no significant impact on delays along the primary segment.

The total daily delay caused by the passage of these trains on the primary segment will be slightly less than 11 vehicle-hours. When the delay incurred by vehicles using the at-grade crossings analyzed on the secondary segments are included, the total delay increases to nearly 80 vehicle-hours daily. Most of the delays (46 vehicle-hours) occur along the line servicing Orange County.

Overall, these delays compare favorably with other rail facilities. The delay at a single at-grade crossing located in the southern California region can be 100 to 300 vehicle-hours daily. Similarly, the delay caused by the traffic light at a single intersection of two arterials carrying 20,000 vehicles daily is on the order of 300 vehicle-hours per day.

The impact of the project on the level of hazard for the various at-grade crossings studied was also analyzed. Although certain at-grade crossings in Riverside County moved up in the overall rankings, the highest ranked crossing in Riverside County is 22nd, at Monroe Street in Indio. Overall, the number of Riverside County at-grade crossings in the top half of the rankings did not change and no crossing is in the highest seven percent of the rankings, the benchmark established to identify a deficiency.

In addition to the empirical analysis and comparison conducted, the effect of the project on rail operations and safety was discussed with Southern Pacific Transportation Company and the California Public Utilities Commission. Their response to the proposed schedule and operations of the project is that the proposed train schedule is feasible and the project will not create any significant new safety hazards.

The project is also expected to affect the highway network. A total of 200 two-way truck trips will be required each day to deliver 4,000 tons of refuse by this mode of transport. The expected on-site activities are projected to generate an additional 500 trip ends (or 250 two-way trips) because of employee and other on-site activity related trips.

Almost all of the truck trips and 85% of the other trips are expected to be to and from the west of Eagle Mountain. The other trips to and from the site are expected to be divided between the east (10%) and the north (5%).

Analysis of the operating conditions on roadway segments and at the intersections included in the study indicates that all traffic movements will continue to experience LOS A operations.

The impacts related to realignment of the Eagle Mountain Railroad and the extension of Eagle Mountain Road were also examined. The realignment of the Eagle Mountain Railroad will create a new crossing with Kaiser Road. The hazard level at this location was analyzed assuming an at-grade crossing with various types of protection, such as signing or automatic gates. It is recommended that an automatic gate be constructed at this location, because of the nearby high school. This at-grade crossing would be ranked 95th out of 96 crossings under these conditions (e.g., there was only one less hazardous crossing location studied).

Similarly, the extension of Eagle Mountain Road will also create an intersection with Kaiser Road. It is recommended that this location be controlled by a two-way stop sign configuration, with the stop signs located on the lower volume roadway, Kaiser Road.

PROJECT ALTERNATIVES

Two alternatives to the project have been identified and analyzed in this study. The first alternative eliminates all deliveries of refuse to the site by truck, without affecting shipments via rail at all. The second alternative would reduce the quantity of material received daily by reducing shipments by both rail and truck.

The first alternative to the proposed project is the removal of all truck deliveries of refuse to the site. In this case, only trains would bring refuse to the site. This alternative would have no significant effect on the projected impacts along the rail routes studied. The projected delays or hazard levels along the rail lines would remain unchanged.

The proposed alternative would significantly reduce traffic to the site. Removal of refuse deliveries by truck would reduce the average daily traffic generated by the project from 1,300 trip ends per day to 500 trip ends per day. All of the reduction would occur along I-10, Eagle Mountain Road, and the Eagle Mountain Road Extension. Traffic on Kaiser Road and Desert Center Rice Road would experience the same increase in traffic as previously projected.

Operating conditions at study area intersections would continue to be excellent under this alternative, with all traffic movements operating at LOS A.

The second alternative to the proposed project will reduce the quantity of material shipped by rail from 16 tons daily to 14 tons daily, and will also reduce the quantity of material shipped by truck from four tons daily to two tons daily.

The reduction in the quantity of material shipped by rail would result in an average of 4.1 trains per day delivering refuse to the site. The amount of daily delay would be reduced proportionately, while the per train delays would remain unchanged. Similarly, the calculated values of the indices would be reduced by 13% along the primary segment, as the hazard index is directly proportional to the daily train volume. Similar but smaller effects of this alternative would occur along the secondary rail segments. Therefore, the finding of no significant impact made for the primary project would still apply.

The reduction in truck traffic would again affect only I-10, Eagle Mountain Road, and the Eagle Mountain Road extension. Two hundred one-way truck trips would be eliminated, and the overall number of trip ends generated by the project would drop from 900 to 700 trip ends per day. Level of service A conditions would still prevail for all traffic movements analyzed in the study area, and a finding of no impact is again applicable.

2. Introduction

2. Introduction

The proposed Eagle Mountain landfill will provide a much needed increase in the southern California region's waste disposal capacity. The effects of the landfill on the transportation infrastructure have been studied, and the results of the transportation study are discussed in this report. The proposed project is expected to utilize two modes of transportation, rail and highway. Figure 1 presents the location of the project with respect to the region.

The majority of the trash transported to the site would arrive via rail, as the Eagle Mountain site is served by a privately owned rail spur constructed by Kaiser Corporation to haul iron ore from the Eagle Mountain Mine to its steel plants located elsewhere in the region. An estimated 16,000 tons of trash per day would arrive via rail. The 4,000 foot long unit trains used to transport trash to the site would be considerably shorter and lighter than the ore trains previously leaving the site.

The trash would be collected at approximately six transfer stations located near the areas generating trash throughout the greater Los Angeles region. The San Gabriel Valley is one area where large quantities of trash are generated while remaining landfill capacity is dwindling rapidly. The City of Los Angeles is another area that has been identified as a possible client for the landfill.

The northern Orange and western San Bernardino county areas are also considered as potential clients for the Eagle Mountain landfill. The analysis of rail impacts was conducted assuming transfer station locations near the geographic centers of these wastesheds and along rail lines of the Southern Pacific Railroad. The northern Orange County area is served by a Southern Pacific line originating at Southern Pacific's Los Angeles Transportation Center.

The analysis conducted during the course of this study assumes that the transfer station would be located along this line, near the boundaries of Anaheim, Buena Park, and Fullerton. Similarly, the analysis of the San Bernardino wasteshed assumes that the transfer station would be located along the Southern Pacific's Alhambra/Yuma line in the Colton/Rialto/Fontana area. The use of these geographically centered locations for analysis reduces the possibility of a significant over or underestimation of project related impacts.

The rail lines have been divided into two basic categories, the primary rail line segment and secondary rail line segments. The primary rail segment includes the entire length of rail line that must be used by all shipments. The primary rail segment is 146 miles long, and includes the Eagle Mountain Railroad and the section of Southern Pacific Transportation Company's Yuma/Alhambra line between Ferrum Junction and Colton. The assumed transfer station locations and rail lines potentially serving the project are shown in Figure 2.

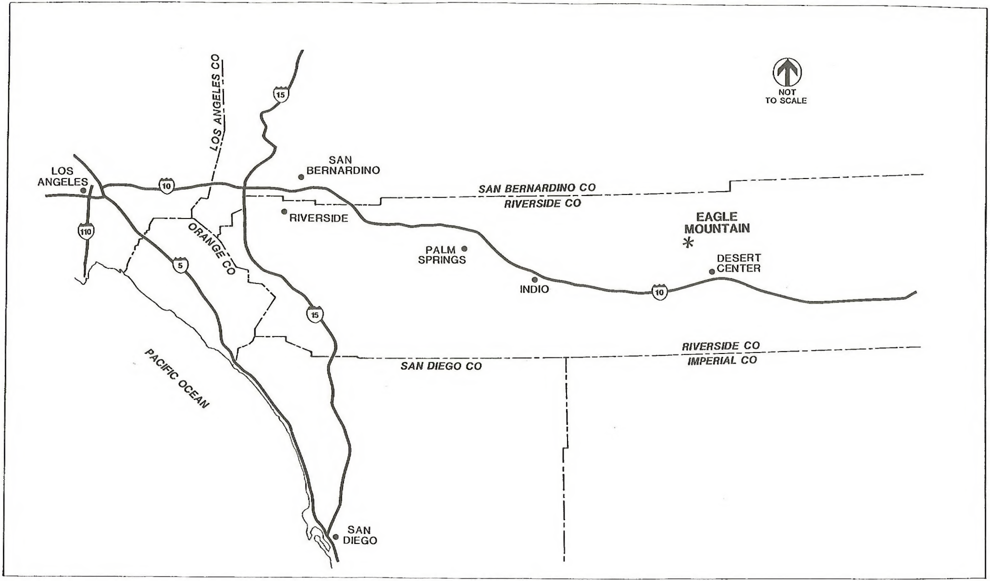

Figure 1
PROJECT LOCATION

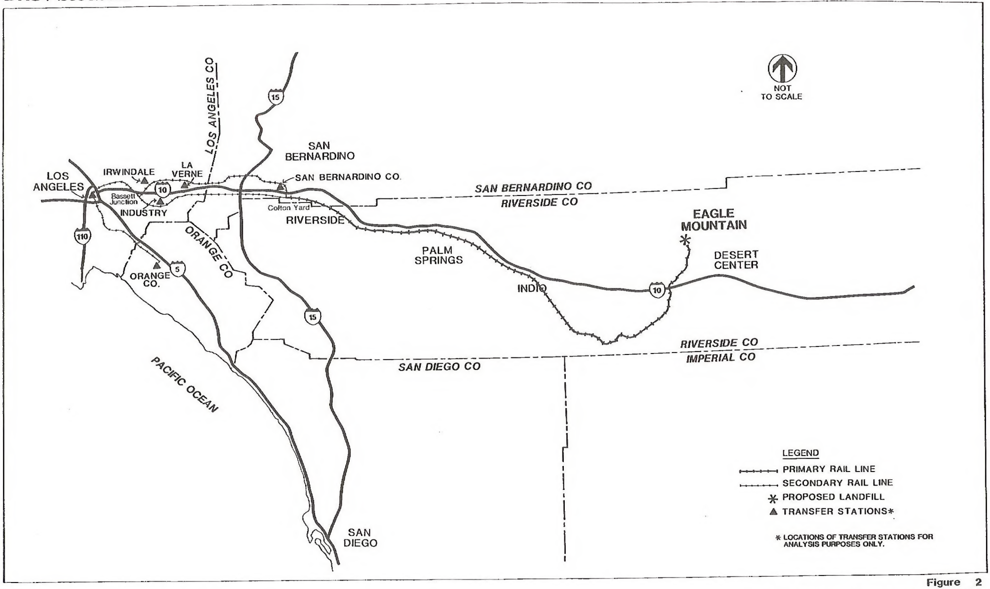

Figure 2
RAIL LINES AND TRANSFER STATIONS

A portion of the overall trash delivered to the Eagle Mountain landfill would arrive via truck. A maximum of approximately 4,000 tons of refuse per day is projected to arrive at the site using the surface highway network. Truck shipments in intermodal shipping containers and conventional transfer trailers would be accepted at the site. This truck traffic would use Interstate Highway 10 (I-10) and Eagle Mountain Road to access the site. The Kaiser truck road would be realigned to avoid the populated areas near the former mine, and provide access directly to the proposed marshalling yard where deliveries of trash would be accepted and processed.

The analysis of rail impacts related to the project assesses both the increase in overall rail traffic on rail lines likely to serve the Eagle Mountain landfill, as well as the increase in at-grade crossing delays at the most heavily traveled roadway crossings along the rail routes. The effect of increased rail traffic on safety at the most heavily traveled at-grade crossings will also be quantified, based on statistical accident data, traffic volumes, roadway geometrics, and type of traffic control.

The origins of shipments to the landfill via the truck mode of transport are less certain than the likely origins of rail-based shipments. Truck shipments of waste would likely come from a widespread variety of areas located nearer to the landfill than the rail shipments. The highway impact analyses in this report focus on the roadways providing access to the site, including I-10, the two interchanges located nearest the site, and the roads providing access to the site. These roadways are displayed in Figure 3.

Analyses related to the truck mode of transport included assessment of the suitability of the proposed route for truck traffic, and roadway and intersection volume-to-capacity (V/C) ratio and level of service analysis at the locations affected by the landfill. These analyses incorporate the impacts of employee traffic along with the expected truck traffic to the site.

Mitigation measures are developed to address geometric deficiencies in the proposed access routes for both modes of transport. Significant negative impacts, defined to include all impacts resulting in operational deficiencies along the proposed transportation routes, are also mitigated to achieve acceptable operating conditions on these facilities.

In addition to the analysis of project impacts, two project alternatives have been defined. The first alternative eliminates the truck mode of transport, reducing the maximum daily tonnage of trash accepted at the site to 16,000 tons. Although this alternative would eliminate truck traffic, highway conditions would still be affected by the proposed landfill. Employee traffic would increase the overall volume of traffic within the study area, and the effects of this increase on roadway and intersection V/C ratios and levels of service are quantified in this report.

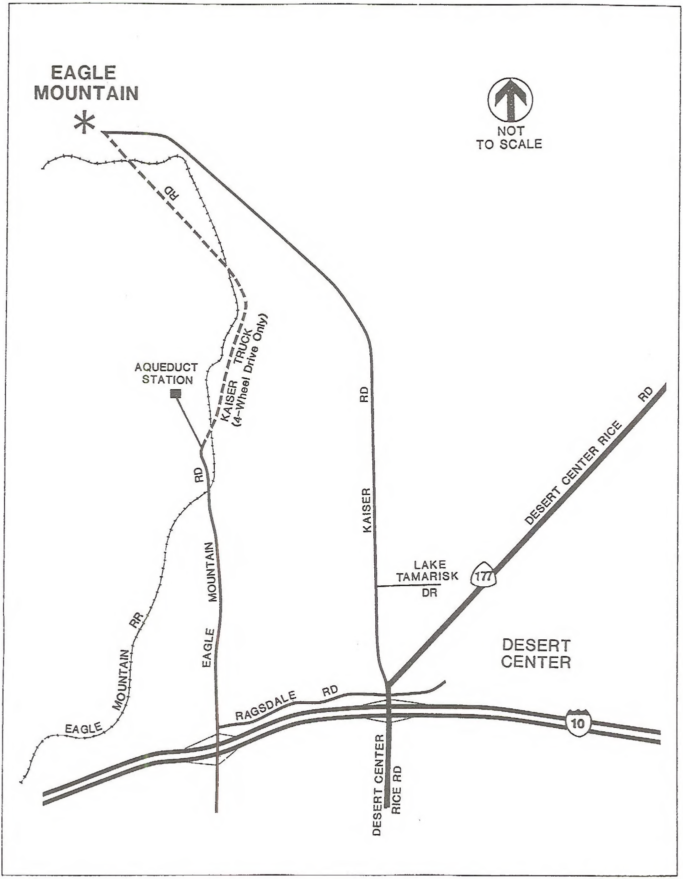

Figure 3
EXISTING ROADWAY AND RAILROAD ACCESS

The second alternative would also reduce the amount of refuse accepted at the site to 16,000 tons daily; however, both rail and truck transport of material would be reduced but not eliminated. The overall effect of this alternative on project impacts is also discussed in this report.

IMPACT ASSESSMENT CRITERIA

This section describes the impact assessment criteria utilized throughout this report. These criteria vary widely; in some instances, nationally recognized assessment criteria are available, while in other cases criteria have been developed based on discussions with the local agency responsible for a particular mode of transport.

RAIL TRANSPORT IMPACT ASSESSMENT CRITERIA

Three aspects of rail transport are assessed in this report: actual rail operations, delays to vehicles at rail/highway crossings, and the hazard or risk of conflict at rail/highway crossings (safety). In all three cases, there are no recognized objective criteria that are nationally recognized.

Rail Operations Impact Assessment Criteria

Rail operations are strictly the responsibility of the Southern Pacific Transportation Company (SPTC), and rail operations were addressed through direct discussions with the SPTC and the California Public Utilities Commission (PUC). The PUC directed questions related to actual rail operations (scheduling, etc.) to the SPTC. A deficient condition has been defined as a situation where SPTC has indicated that a proposed schedule is not feasible.

Rail At-grade Crossing Delay Impact Assessment Criteria

An important concern of the public when assessing the impacts of increased train traffic is the delay to highway traffic when the train crosses an at-grade crossing. A detailed and complex set of equations is utilized in the report *The Feasibility of Hauling Solid Waste by Railroad from the San Gabriel Valley to Remote Disposal Sites* (Southern California Association of Governments, April, 1988). These equations form the basis of the at-grade delay analyses described in this report.

The delay at an at-grade crossing is a function of the time of crossing blockage, highway traffic volume, and the rate of vehicle queue discharge after the train has passed. The form of this relationship is:

$$Delay = T_B^{2}*(q/2)*(1-q/d);$$

Where:

Delay = Total minutes of vehicle delay
T_B = The length of time the crossing is blocked by the train
q = Vehicle arrival rate, vehicles per minute
d = Vehicle departure rate, vehicles per minute

The vehicle departure rate is a function of the number of traffic lanes available and the percentage of trucks in the traffic stream. Trucks are assumed to constitute 10% of the overall traffic stream during the late night and early morning hours, when the unit trains are expected to be traveling between the transfer stations and Eagle Mountain. This assumption results in a departure rate of 1,520 vehicles per hour per lane following passage of the trains.

The hourly vehicle arrival rate during the proposed hours of operation is assumed to equal 4% of the overall average daily traffic. This is conservative, as approximately 20% of average daily traffic typically occurs during the two peak hours of the day, and distribution of the remaining traffic evenly over the remainder of the day would result in 3.6 percent for each hour. Typically, there are several hours of elevated traffic volume during the course of the day, with somewhat lower volumes during the proposed hours of operation.

The calculation of the length of time during which the crossing is blocked by the train (blockage time) is somewhat more complex. There are two components to be calculated, one of which is a constant, and one of which is related to the characteristics of both the crossing and the train itself. The constant component of the blockage time is based on the lead and lag time of the crossing closing. A lead time of 28 seconds and a lag time of eight seconds are typical, or a total of 0.603 minute.

The variable component of the gate blockage time is equal to the span of time that starts when the front of the train enters the near side of the intersection and ends when the back of the train passes the point beyond the intersection that signals the end of the blockage to the crossing mechanism. The distance beyond the intersection is normally 50 feet, and this value will be used in the subsequent calculations. Algebraically, the overall gate blockage time is:

$$T_B = .603 + ((50 + l + w)/v);$$

Where:

l = length of the train in feet
w = roadway width at the crossing in feet
v = train speed in feet per second.

Train speeds were determined based on SPTC timetables for train traffic along the various segments. The width of each roadway was either obtained from the jurisdiction responsible for the roadway in the vicinity of the crossing or was estimated based on the number of lanes and assuming a typical lane width of twelve feet per lane.

In addition to the total delay incurred at each crossing, the number of vehicles delayed is also of interest. Based on the variables defined previously, the total number of vehicles delayed at a crossing is:

$$\text{Vehicles Delayed} = T_B * q/(1-q/d).$$

Once the total delay and the number of vehicles delayed are computed, it is quite simple to calculate the average delay per vehicle, which will also be used to describe the impacts related to the added train traffic.

The reports reviewed did not establish a benchmark criteria for delay related deficiencies, but discussions with the PUC resulted in their identifying locations along the heavily utilized Alameda Corridor which serves the Port of Los Angeles as the only area where problematic delays occur in this region. The delays incurred at crossings along this corridor by nighttime operations of a single refuse train under existing conditions will, therefore, serve as the benchmark for identifying deficient conditions on the primary segment of the rail line. These benchmark delays are on the order of one to three hours of cumulative delay (all vehicles impacted). The delays on the primary segment will also be compared to delays on other parts of the system studied.

Rail Safety Impact Assessment Criteria

The most widely utilized measure of rail safety at at-grade crossings is known as the hazard index. This index is intended to identify the relative estimated hazard among the crossings included in the analysis. It is not intended to specifically identify high or low probability of accidents, nor is it meant to predict rail/vehicular traffic accidents due to the presence of increases in train activity.

The United States Department of Transportation has funded considerable research into the subject of safety at at-grade crossings. Although numerous hazard indices have been developed, a study of eleven different indices of varying complexity (i.e., some included historic accident information, others were based on probability distribution formulations, etc.) concluded that all of the indices studied gave basically the same rankings (Bezkorovainy, Georgy, and Holsinger, Robert - *Optimum Hazard Index Formula for Railroad Crossing Protection for Lincoln, Nebraska,* 1967, 18 pp.). Furthermore, the following equation best fit the composite arithmetic average of all the rankings as determined by the eleven different hazard index formulae:

$$H = V * T * P_f$$

Where:

H = The calculated hazard index
V = The average twenty-four hour traffic volume
T = The average twenty-four hour train volume
P_f = The protection factor

The protection factor is a function of the type of protection present at the crossing; the applicable values of this factor are presented in Table 1. The protection values have been developed based on empirical studies of the effectiveness of various types of warning devices.

Table 1
Protection Factor Values

Protection Type	Protection Factor
Crossbuck	1.00
Signs	1.00
Wigwag	0.34
Flashing Light	0.20
Automatic Gates	0.11

The PUC, which is responsible for rail activities and safety in California, was consulted regarding the identification of locations with safety deficiencies. The identification of locations targeted for improvements is performed on the basis of subjective rather than objective criteria. Although they often perform a similar hazard index calculation, this is done for informational purposes only. Deficient locations are identified through meetings involving the PUC, local agencies, the California Department of Transportation (Caltrans) and the railroad.

The PUC list of locations targeted for improvement currently includes approximately 600 crossings, or 7% of the 8,700 crossings in California. Based on this fact, a potentially deficient condition will be noted whenever a crossing on the primary segment falls within the top 7% of the grade crossings studied.

The potential impact of the project from a safety perspective has also been discussed directly with the PUC.

ROADWAY IMPACT ASSESSMENT CRITERIA

Two types of analyses have been conducted as part of the roadway impact assessment: roadway segment analysis and intersection operations analysis. The roadway segment analysis and the intersection operations analysis are both based on methodologies presented in the *Highway Capacity Manual* (Special Report 209, Transportation Research Board, Washington, D.C., 1985). The *Highway Capacity Manual* (HCM) is the most widely recognized standard for roadway impact analysis in the nation, and provides analysis methodologies explicitly intended for assessing the types of conditions found in the study area.

Roadway Segment Impact Assessment Criteria

The roadway segments serving the proposed project site have been analyzed using the analysis methodology for two-lane highways, which is defined simply as a two-lane roadway having one lane for use by traffic in either direction. The methodology can be used to determine the level of service (LOS) for a segment of roadway based on the following characteristics:

- The traffic volume
- The directional distribution of traffic
- The roadway lane and shoulder widths
- The proportion of heavy vehicles in the traffic flow

A maximum service flow rate is developed for each individual segment based on the above characteristics that corresponds to LOS A through LOS F, with LOS C being the normal limit of acceptable operations in non-urbanized areas. The service flow rates calculated in this fashion are compared to the actual or projected traffic volume on the segment to determine the segment's LOS. Any resulting level of service worse than LOS C is defined as a deficient condition, and a significant impact occurs wherever either a deficiency is created by the project or when the level of service at a previously deficient location degrades (i.e., LOS E to LOS F).

Unsignalized Intersection Impact Assessment Criteria

Unsignalized intersection operating conditions can also be assessed utilizing techniques outlined in the *1985 Highway Capacity Manual.* A level of service (LOS) can be determined utilizing the methodology outlined in the manual for unsignalized intersections. Level of service is reported on a scale of A to F, with A representing excellent operating conditions and F representing extremely congested conditions. The definition of a significant impact is identical to the definition for roadway segments.

At unsignalized intersections which are controlled by stop signs, a level of service is measured for each traffic movement which is controlled by a stop or yield sign. For example, the minor street through and left-turn movements must first stop and then proceed only when the major street cross traffic is clear. Levels of service are therefore calculated for the minor street movements based on the availability of gaps in major street traffic that will allow minor street traffic to proceed through the intersection. The major street traffic is never forced to stop and experiences no delay; therefore no level of service calculation is required. The number of gaps in major street traffic not utilized by minor street traffic is referred to as the reserve capacity. The relationship between reserve capacity and level of service is summarized in Table 2.

Table 2
Definition of Level of Service Interpretation at Unsignalized Intersections

Level of Service	Description	UNSIGNALIZED Reserve Capacity (Vehicle/hour)
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	400+
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	300-399
C	Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted. This level is typically associated with design practice for peak periods in non-urbanized areas.	200-299
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	100-199
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	0-99
F	Forced flow. Represents jammed conditions. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	<0

Source: *Highway Capacity Manual*, Special Report 209, Transportation Research Board, Washington D.C., 1985.

3. Existing Conditions

3. Existing Conditions

The existing conditions along the proposed rail and highway routes serving the Eagle Mountain landfill were assessed to provide a basis for determining the impacts of the proposed project. The conditions along the rail route are discussed first, because of the greater quantity of materials to be shipped by rail, followed by the discussion of existing highway conditions.

RAIL ROUTE EXISTING CONDITIONS

The rail route existing conditions section describes the characteristics of the rail lines, and the routes that would be traveled by trains between the transfer stations and the Eagle Mountain landfill. This section also estimates current at-grade crossing delays caused by a train with characteristics similar to the proposed refuse unit trains. Finally, an existing conditions relative hazard index is developed, incorporating the characteristics of the at-grade crossings and current traffic levels on both the highway and rail line at each crossing.

Rail Line Description

The rail lines serving the various transfer stations identified in the introduction of this report have been broken down into a total of eight discrete segments for the purposes of this analysis. The segments were identified based on the locations of the transfer stations along the rail lines and key junction points where trains would be switched on or off a particular route. These segments are displayed in Figure 4. The existing usage and characteristics of the rail line segments are discussed individually, while Table 3 summarizes the most important characteristics of each segment. The characteristics of the at-grade crossings are discussed within the individual segment descriptions, while Appendix A contains a comprehensive listing of the existing conditions at all at-grade crossings.

A total of 268 miles of rail line were analyzed during this study, with 231 at-grade crossings identified along their length, or an average of one at-grade crossing every 1.2 miles. Data pertaining to rail and highway traffic volumes and crossing geometric conditions were obtained from a variety of sources, including the Southern Pacific Transportation Company, the California Public Utilities Commission (PUC), the Southern California Association of Governments (SCAG), Caltrans and local city traffic surveys. Data was obtained for over 97% of the crossings. Average daily train volumes ranged from 2 to 50 trains per day, while traffic volumes on the roadways crossing these rail lines at-grade ranged from less than 1,000 vehicles daily to over 43,000 vehicles daily.

Table 3
Rail Line Segment Characteristics

Segment	From/To	Number of Crossings	Length	Train Volumes Low	High	Median	Average Distance Between Crossings	Average Daily Volume
1	Ferrum/Colton Yard	31	146	28	50	35	4.7	2,200
2	Colton Yard/ Industry Transfer Station	20	33	28	35	35	1.6	8,700
3	Industry Transfer Station/ Bassett Junction	9	11	28	28	28	1.2	10,100
4	Bassett Junction/ SP's LATC	20	14	28	28	28	0.7	14,100
5	SP's LATC/ N. Orange Co.	50	21	4	28	12	0.4	12,900
6	Colton Yard/ La Verne Transfer Station	74	30	2	8	2	0.4	3,700
7	La Verne Transfer Station/ Irwindale Transfer Station	19	9	4	4	4	0.5	3,000
8	Irwindale Transfer Station/							

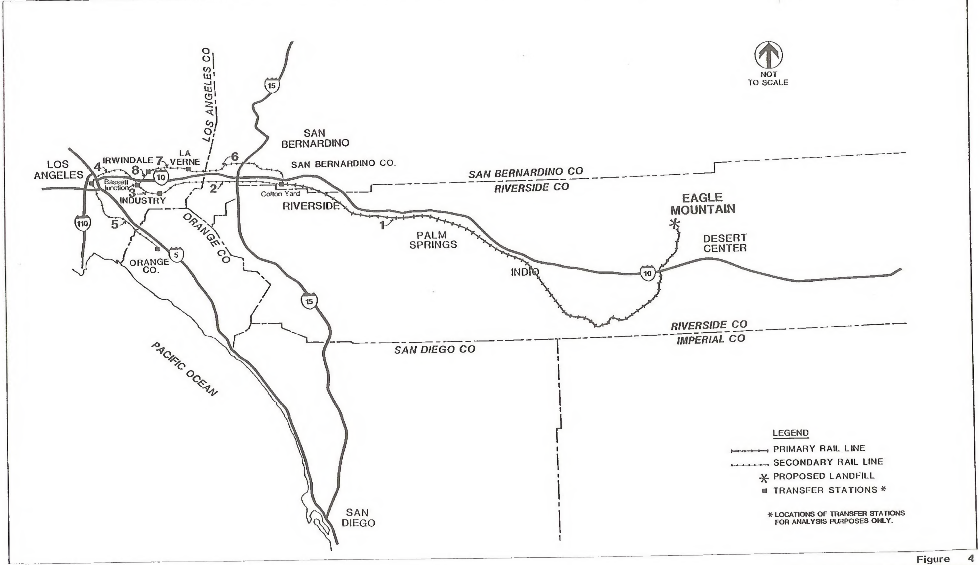

Figure 4
RAIL LINE ANALYSIS SEGMENTS

Segment 1: Eagle Mountain to the Colton Yard/San Bernardino Transfer Station. This 146-mile segment is the primary area of interest in this study, as all trains destined for the Eagle Mountain landfill would use this section of rail line to access the site. The segment is located in the least populated part of the study area, and consists of 52 miles of privately owned spur (the Eagle Mountain Railroad) and 94 miles of rail line owned by the Southern Pacific Transportation Company. The Southern Pacific's section is part of the Yuma/Alhambra main line. Although the segment is the longest of those studied, only 31 at-grade crossings were identified along its length. The average roadway daily traffic volume was 2,200 vehicles per day, the lowest of all segments studied.

The average distance between crossings is 4.7 miles, the highest of all segments identified. Even when the 52-mile private spur (which has no at-grade crossings) is eliminated from consideration, the average distance between at-grade crossings is still over three miles. This is nearly twice as high as the next highest average distance between at-grade crossings for the other seven segments.

Daily train volumes along this segment range from 28 to 50 trains daily, with a median average of 35 trains. Train speeds on this segment are fairly high, ranging from 30 to 60 miles per hour (MPH).

This segment is considered in the greatest detail, because all trains, no matter what their origin, would use this segment to access the Eagle Mountain landfill. There are no at-grade crossings for the next 15 miles east of the Colton yard, so the San Bernardino County transfer station could be located in a wide geographic area without affecting the validity of the impact analysis.

Segment 2: Colton Yard to the Industry Transfer Station. This segment is the second longest section within the study area, and it is also a part of the Southern Pacific Transportation Company's (SPTC's) Yuma/Alhambra line. Twenty at-grade crossings were identified along its 33-mile length, or one at-grade crossing every 1.6 miles. The average at-grade crossing roadway volume on this segment was 8,700 vehicles per day, significantly higher than the average for the previous segment, and slightly higher than the overall observed average of 7,200 vehicles per day.

This is the second most heavily utilized rail line in the study area, with 28 to 35 trains per day using various portions of this segment. Most refuse trains would also use this segment of rail line, although shipments from Irwindale or La Verne could travel an alternate route to the Colton Yard. Both possible routes to and from these two transfer stations were assessed in the impact analysis. Train speeds on this segment are consistently high, ranging from 60 to 65 MPH.

The roadway volumes at the at-grade crossings along this segment range from 900 vehicles per day to 20,000 vehicles per day, with the majority of crossings carrying between 4,000 and 10,000 vehicles per day.

Segment 3: Industry Transfer Station to Bassett Junction. This segment runs approximately 11 miles, from the east end of Industry to the west end of Industry, near Vineland Avenue. Again, it is a piece of the SPTC's Yuma/Alhambra line. Bassett Junction is the point where this line connects with the SPTC's Baldwin Park line.

Nine at-grade crossings are located along this segment, with roadway volumes ranging from less than 1,000 vehicles per day to over 28,000 vehicles per day. Daily vehicular traffic volumes at the at-grade crossings averaged 10,100 vehicles per day on this rail segment. The average distance between crossings on this segment is 1.2 miles, somewhat less than the average distance between crossings on the segments previously described.

The average number of daily trains along this segment is very consistent, with 28 trains per day reported at each of the at-grade crossings. The train speed for through traffic on this segment of rail line is 60 MPH.

Segment 4: Bassett Junction to the Southern Pacific's Los Angeles Transportation Center. This segment, the final part of the Alhambra/Yuma line included in the study, is approximately 14 miles long, and terminates at the SPTC's major yard facility in East Los Angeles. This yard is located just east of the Los Angeles River channel and just north of the San Bernardino Freeway (I-10). There are a total of 20 grade crossings on this segment, located an average of 0.7 mile apart. The daily volume of train traffic is, again, very consistent along the length of this segment, with an average of 28 trains per day reported at each of the at-grade crossings. Train speeds begin to drop on this segment, ranging from 60 MPH down to 20 MPH.

Roadway traffic volumes at the at-grade crossings located along this segment are somewhat higher than the roadway volumes previously discussed. These volumes range from a low of 2,000 vehicles per day to over 30,000 vehicles per day at several crossings. The 14,100 vehicles per day average for at-grade crossings along this segment is the highest in the study area.

Segment 5: The Southern Pacific's Los Angeles Transportation Center to the Northern Orange County Transfer Station. This segment is 21 miles long and is comprised of pieces of the SPTC's San Pedro and Santa Ana lines. The total of 50 at-grade crossings identified result in an average of only 0.4 mile between crossings, the lowest of all segments studied. The roadway traffic volumes at the at-grade crossings are also relatively high, ranging from less than 1,000 vehicles per day to over 43,000 vehicles per day, the highest volume of roadway traffic in the study area. The average at-grade crossing vehicular volume on this segment is 12,900 vehicles per day, second highest in the study area.

Train speeds along this segment are generally low, ranging from just ten miles per hour at the north end of the segment to a high of 20 miles per hour at the southern end of the segment. The average daily number of trains ranges from four to 30 trains per day, with most crossings experiencing ten to twelve train crossings per day.

Only trains to and from the northern Orange County transfer station would utilize this segment. The last at-grade crossing included on the segment is at Stanton Avenue in Buena Park. Another at-grade crossing on the Santa Ana line does not exist before Loara Street in Anaheim, a distance of 4.5 miles. Thus, the transfer station could again be located in a broad geographic area without affecting the results of the impact analysis summarized in this report.

Segment 6: The Colton Yard to the La Verne Transfer Station. This segment of rail line could potentially serve shipments from both the La Verne transfer station and the Irwindale transfer station. There are a total of 74 at-grade crossings along this 30-mile length of rail line, or one crossing every 0.4 mile. The average vehicular traffic volume for at-grade crossings along this segment is 3,700 vehicles per day, well below the overall observed average.

The number of trains traversing this segment is also below the average observed elsewhere in the study area. Only two to eight trains per day traverse the various at-grade crossings along this segment, with only two trains per day at most crossings. Train speeds are only 10 MPH on this segment.

Segment 7: The La Verne Transfer Station to the Irwindale Transfer Station. This segment of rail line is only nine miles long, and might be used by shipments from the Irwindale transfer station (eastbound) or the La Verne transfer station (westbound). The traffic volumes at the at-grade crossings on this segment are again lower than the overall study area average. The average along this segment is 3,000 vehicles per day, lower than any other segment except Segment 1.

There are an average of two at-grade crossings per mile along this segment, ranking third among the segments analyzed. There are a total of 19 crossings along this nine-mile long segment of railroad. Train traffic along this segment is very consistent, with an average of four trains per day reported at each of the at-grade crossings. Travel speeds on this segment of rail line are again 10 MPH.

Segment 8: The Irwindale Transfer Station to Bassett Junction. This is the final segment of railroad included in the Eagle Mountain Transportation Study. Only 4.5 miles long, this segment connects the Baldwin Park line of the SPTC's rail network to the Alhambra/Yuma line. Usage of this segment would be similar to the usage described for Segments 6 and 7, with shipments possible from either the Irwindale Transfer Station or the La Verne Transfer Station.

The average traffic volume at the at-grade crossings along this segment is 7,600 vehicles per day, slightly higher than the overall study area average. The at-grade crossings are an average of 0.6 mile apart, approximately half the study area average. Train traffic along this segment, again, averages four trains per day. Train speeds along this segment are limited to 20 MPH along the entire 4.5-mile long segment.

Existing At-grade Crossing Delays

Under existing conditions, most crossings would experience relatively low delays during the passage of a refuse train. The description of delays here and in the impact analysis focuses on the at-grade crossings located along the primary study segment (Segment 1), and includes all locations along other segments where a total of at least one-half hour of vehicle delay would occur under existing conditions during the passage of a typical refuse train. This is the equivalent of the delay at a minor signalized intersection, serving 1,000 vehicles during a single peak hour, operating at LOS A (excellent operating conditions), with only two seconds of delay to each vehicle. On rail segments where this criteria was not met, a minimum of the two highest delay locations has been included in the analysis.

Along the primary segment, the total delay caused by the passage of a single train with the proposed configuration of the unit trains traveling to the site would be 0.94 vehicle-hour. The maximum number of vehicles delayed at a single crossing is approximately twelve, at Hunts Lane in Colton and at Monroe Street in Indio. The highest total vehicle delay at any one crossing on this segment would be approximately 0.17 hour, which again occurs at the crossing of Monroe Street in Indio. In general, per vehicle delays would typically be on the order of one minute for each vehicle.

Total delays at crossings along other segments range as high as 3.5 hours (Slauson Avenue on Segment 5), where a total of more than 120 vehicles would be delayed by the passage of a single unit train. This would cause an average delay of 1.7 minutes to each vehicle affected by the train's passage. Although the Slauson Avenue crossing is not the highest volume crossing in the study area, a combination of low train speeds and fairly high traffic volumes (average daily traffic at this crossing is 28,300) results in the highest overall delay of any crossing in the study area.

Based on this existing conditions analysis, a total of 95 crossings will be analyzed in the impact section of this report (all 31 crossings along the primary segment and 64 locations along other segments within the study area).

Rail Line Existing Conditions Relative Hazard Index

A relative hazard index has been calculated for each of the at-grade crossings on the primary rail segment and all secondary rail segment crossings included in the delay analysis; these locations are also likely to involve the greatest number of conflicts between trains and vehicular traffic.

The actual values of the calculated hazard indices for existing conditions range from 200 to 222,900. The maximum value of the hazard index occurs at Pine Street, on one of the potential haul routes serving locations in the San Gabriel Valley. The type of protection at this location is warning signage, and an average of 28 trains per day use this crossing, as do 7,961 vehicles.

The highest hazard index value on the primary segment is found at Hunts Lane in Colton (H = 55,900), while the highest calculated hazard index in Riverside County is found at Monroe Street in Indio (22,900), closely followed by 22nd Street in Banning (21,800). These two locations rank 27th and 28th, respectively, among the locations included in this analysis. The existing protection at both of these crossings is gate protection, the safest form of protection available at an at-grade crossing.

The highest hazard location in Riverside County not protected by gates is found at 50th Avenue in Coachella. This location, with a hazard index of 6,400, is ranked 50th overall. Currently, flashing lights are used to protect this location.

This completes the description of existing conditions along the rail lines within the study area. Study area roadway existing conditions will be described in the next section.

TRUCK ROUTE EXISTING CONDITIONS

The highway existing conditions section discusses the highway network that would be used to access the landfill. Existing roadway geometrics are described, with particular attention to truck related characteristics, such as tight turning and narrow lane widths.

The highway existing conditions section also describes existing traffic volumes in the vicinity of the project site, and analyzes current peak hour operating conditions.

Existing Geometrics and Traffic Volumes

As previously mentioned, truck traffic to the site will be generated from a variety of areas. Due to the widespread wasteshed to be served by truck and the fact that exact transfer station locations are not yet identified, it is not possible to quantify all trucking related impacts from point of origin to the Eagle Mountain landfill site. The I-10 Freeway is the first route where all truck trips to the site will converge, and, therefore, is one major focus of the analysis. The other key routes included in the truck impact study are Eagle Mountain Road, Kaiser Road, Desert Center Rice Road and Ragsdale Road. A description of the physical and operational characteristics of each route follows. Figure 5 displays Average Daily Traffic (ADT) volumes on each facility. These counts were taken during the month of November 1989, except for the freeway volumes, which were counted by Caltrans in 1988. The traffic counts are included in Appendix B.

Interstate 10 Freeway. This freeway facility runs from the Los Angeles area through a portion of San Bernardino County into Riverside County and past the Eagle Mountain site. It is the major access route for all automobile and truck traffic originating at or destined to the project

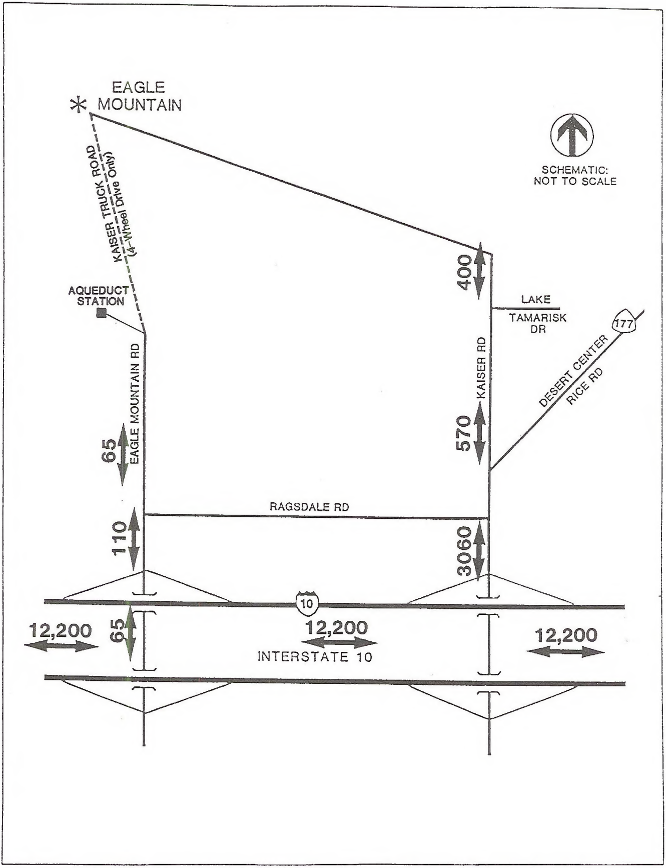

Figure 5
EXISTING AVERAGE DAILY TRAFFIC

site. Access to the Eagle Mountain/Desert Center area is provided via two full-diamond interchanges with Eagle Mountain Road and Desert Center Rice Road. Near the site, I-10 has two lanes in each direction, and carries an average daily traffic volume of 12,200 vehicles, with a peak hour volume of 850 vehicles (per Caltrans 1988 Traffic Volume Census).

Eagle Mountain Road. As currently proposed, Eagle Mountain Road would be the main surface roadway access route for truck traffic between I-10 and the project site. The road runs from south of I-10 to Kaiser Truck Road and the Eagle Mountain Aqueduct station located approximately seven miles north of the freeway. A full-diamond interchange (on and off ramps in both the eastbound and westbound directions) is provided at I-10. Eagle Mountain Road is not a through road south of the freeway. Under the freeway overcrossing, it carries one lane in each direction within a 40-foot curb-to-curb cross section. North of the westbound ramps, it narrows to 32 feet, curb-to-curb. Ragsdale Road intersects Eagle Mountain Road in a "T" intersection immediately north of the westbound freeway ramps. The existing traffic volumes on Eagle Mountain Road and the freeway interchange are very low because the roadway primarily serves only traffic related to the aqueduct. The average daily traffic volume on Eagle Mountain Road north of the freeway ramps is 110 vehicles, while north of Ragsdale Road it drops to 65 vehicles.

Kaiser Road/Desert Center Rice Road Interchange. Kaiser Road runs from north of the freeway north to the existing Eagle Mountain mine site (approximately eleven miles from the freeway). It intersects Desert Center Rice Road north of the freeway. Access to Kaiser Road from the freeway is provided by the Desert Center Rice Road interchange. Under the freeway overcrossing, the roadway is 40 feet wide curb-to-curb. The average daily traffic volumes at the interchange and on Kaiser Road are considerably higher than Eagle Mountain Road due to traffic related to the services in Desert Center, the residential population of Lake Tamarisk (approximately 550 people), the operations at the Eagle Mountain site, and the existing school operations. Between Ragsdale Road and the freeway, Desert Center Rice Road carries 3,050 vehicles per day. Between Desert Center Rice Road and Lake Tamarisk Drive, Kaiser Road carries 570 vehicles per day; and north of Lake Tamarisk Drive it carries 400 vehicles per day.

Ragsdale Road. Ragsdale Road is a short, two-lane roadway which connects Eagle Mountain Road with Kaiser Road. It runs immediately north of and parallel to the freeway. It is 36 feet wide, except at several bridges where it narrows to 24 feet.

Existing Roadway Segment Operations

Level of service calculations have been performed for the following three roadway segments:

- Eagle Mountain Road north of Ragsdale Road
- Kaiser Road north of Desert Center Rice Road
- Kaiser Road north of Lake Tamarisk Drive

The results of this analysis are summarized in Table 4, and indicate that acceptable operations exist on all of these roadway segments.

Existing Intersection Operations

The intersections most likely to be impacted by truck and automobile traffic related to the project are Eagle Mountain Road/Ragsdale Road, Eagle Mountain Road/I-10 interchange and Desert Center Rice Road/I-10 interchange. These are the intersection locations which will experience the greatest increase in traffic volume due to the project, and they have been analyzed to determine existing and forecast future operating conditions.

The level of service analysis for the interchanges of I-10 with Eagle Mountain Road and Desert Center Rice Road indicates that LOS A (excellent) conditions exist for all movements during the peak hour. The intersection of Eagle Mountain Road/Ragsdale Road is also operating at LOS A. Traffic operations analysis worksheets are included in Appendix C.

Table 4
1989 Existing Conditions
Roadway Segment LOS Analysis Summary

Segment	Peak Hour Volume	LOS
Eagle Mountain Rd. n/o Ragsdale Rd.	12 (5:45 - 6:45 AM)	A
Kaiser Rd. n/o Desert Center Rice Rd.	51 (1:00 - 2:00 PM)	A
Kaiser Rd. n/o Lake Tamarisk Dr.	49 (4:00 - 5:00 PM)	A

4. Future Year No-Build Conditions

4. Future Year No-build Conditions

The proposed landfill is not expected to begin operating at full capacity until 1995. This section of the report forecasts changes in existing conditions within the study area between now and 1995, which will allow comparison of conditions related to the transportation infrastructure both with and without the project. The estimation of project impacts will then be based on this comparison.

FUTURE CONDITIONS RELATED TO RAIL TRANSPORT

Rail line usage tends to change more slowly than highway usage, and significant changes in the amount and composition of rail traffic are not expected over the next five years. Continued growth in the southern California region is expected to result in increased traffic volumes at the at-grade crossings within the study area. The large region encompassed by the study area requires a generalized approach to estimating traffic growth within the study area.

The Southern California Association of Governments (SCAG) periodically publishes projections of expected changes in the socioeconomic characteristics (i.e., population and employment) contributing to changing travel demand within the various parts of the region. SCAG's *1984 Regional Transportation Plan* specifically addresses growth in travel demand through the year 2000 for 23 individual subregions within SCAG's jurisdiction. Volume Three of the Plan discusses the characteristics of each subregion individually, including travel demand. The report states that the home-based work trip is a good indicator of future traffic levels, and the discussion of each subregion is focused on this type of trip.

The number of home-based work trip ends has been used to estimate average annual growth in traffic along each of the rail segments described in the existing conditions section of this report. The development of these growth rates is summarized in Table 5.

Detailed information is available for the majority of the rail segments analyzed. The one exception is the section of Segment 1 located in Riverside County. This section is located primarily within the desert region of Riverside County, and detailed travel demand estimates for this region are not available from SCAG's travel demand model.

The report does indicate that the amount of urbanized land in the desert subregions of SCAG's jurisdiction are expected to double between 1980 and 2000. The growth rate for at-grade crossings located along this section of Segment 1 is based on the assumption that doubling the amount of urbanized land will result in a doubling in the amount of traffic on existing surface streets during this 20-year time period.

Table 5
Study Area Traffic Growth Rate Summary

Segment	SCAG Subregion	Home/WorkTrip Ends 1980	Home/WorkTrip Ends 2000	Ratio	Annual Growth
1, Riverside Co.	Riverside County Deserts	N/A	N/A	2.0*	3.5%
1, San Bernardino Co.	E. San Bernardino Valley	314,710	518,528	1.648	2.5
2, All	Chino Basin	313,477	631,433	2.014	3.6
3, All	East San Gabriel Valley	801,175	925,111	1.155	0.7
4, All	Central L.A. Glendale/Pasadena	4,164,867	4,660,244	1.119	0.6
5, Los Angeles	Long Beach/Downey	1,142,369	1,456,309	1.275	1.2
5, Orange County	Northwest Orange County	1,838,576	2,426,060	1.320	1.4
6, All	Chino Basin	313,477	631,433	2.014	3.6
7, All	East San Gabriel Valley	801,175	925,111	1.155	0.7
8, All	East San Gabriel Valley	801,175	925,111	1.155	0.7

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* Based on general growth in desert regions

Note: SCAG's 1989 Regional Growth Management Report was obtained after the completion of the analysis. Comparison of this report to the data used to develop the growth rates in this table supports the continued use of these growth rates.

Future No-Build Delays to Highway Vehicles at At-Grade Crossings

The projected increases in traffic volumes within the study area will result in somewhat increased delays to vehicles when a train crosses any of the at-grade crossings located within the study area.

Overall delays related to the passage of a single train of the same length as the proposed unit trains traveling to Eagle Mountain would result in a total of 1.16 vehicle-hours of delay along the primary analysis segment, an increase of nearly 25% when compared to the estimate for existing conditions. The maximum number of vehicles affected at any one crossing on the primary segment would also increase under future no-build conditions. A total of 15 vehicles would be delayed at the Monroe Street crossing in Indio; whereas, only 12 vehicles would be affected under existing conditions. This is again a 25% increase when compared to existing conditions.

Slower growth in the more urbanized regions of the study area results in smaller increases in delay along the other rail segments studied. The maximum delay at a single crossing along the other secondary analysis segments would only increase by seven percent between 1989 and 1995, from 3.5 vehicle-hours of delay to 3.73 hours of vehicle delay. Similarly, the number of vehicles delayed would rise ten percent, from over 120 vehicles to over 130 vehicles.

Rail Line Future No-Build Condition Hazard Index

The increased traffic volumes at study area at-grade crossings also affect the at-grade crossing hazard indices. The recalculated hazard indices range from 250 to 275,600. The highest values are again projected for at-grade crossings located within the heavily urbanized western regions of the study area.

Hunts Lane in Colton is again the highest hazard location along the primary segment, with a calculated hazard index value of 64,800, a sixteen percent increase over the existing condition hazard index at this location. This location has moved from the 13th highest hazard among locations studied to the 11th highest overall ranking. This is a result of the faster growth in this area when compared to the locations it surpassed, which are located in Los Angeles County.

The highest hazard locations along the primary segment in Riverside County did not move up the overall list of at-grade crossings. Monroe Street and 22nd Street are still ranked 27th and 28th. The calculated hazard indices for these locations under future conditions are 28,100 and 26,800, respectively.

Finally, the highest hazard location in Riverside County not already protected by gates is still 50th Avenue in Coachella, where the estimated future no-build condition hazard index is estimated to be approximately 7,800. This value places 50th Avenue in the 47th rank overall. The future conditions without the project at-grade crossing analysis is contained in Appendix D.

FUTURE YEAR NO-BUILD CONDITIONS ON STUDY AREA ROADWAYS

Before quantifying impacts of the proposed project on study area roadways, it is necessary to first identify future conditions without the project. Future year (1995) traffic volumes on surface roadways (all non-freeway) are forecast utilizing data contained in the Southern California Association of Governments (SCAG) Regional Transportation Plan (see previous section for further detail on methodology). Freeway traffic volumes have been forecast based on historical growth trends between 1980 and 1988. Comparison of I-10 traffic volume counts for those years illustrates an overall growth of 48 percent, or a compounded rate of five percent per year. Projecting this rate forward to 1995 yields a freeway growth rate of 41 percent.

Figure 6 illustrates forecast future ADT volumes on roadways near the project site. Roadway operations level of service analyses have been completed for this scenario using the estimated 1995 traffic volumes. The roadway segment operations analysis for this scenario is presented in Table 6, and indicates that acceptable operations are expected under these conditions.

All traffic movements at the I-10 interchanges with Eagle Mountain Road and Desert Center Rice Road and the intersection of Eagle Mountain Road/Ragsdale Road are forecast to operate at LOS A with excellent operating conditions. Appendix E contains the traffic operations analysis worksheets for future conditions without the project.

Table 6
1995 Conditions Without Project
Roadway Segment LOS Analysis Summary

Segment	Peak Hour Volume	LOS
Eagle Mountain Rd. n/o Ragsdale Rd.	15	A
Kaiser Rd. n/o Desert Center Rice Rd.	63	A
Kaiser Rd. n/o Lake Tamarisk Dr.	60	A

DKS *Associates*

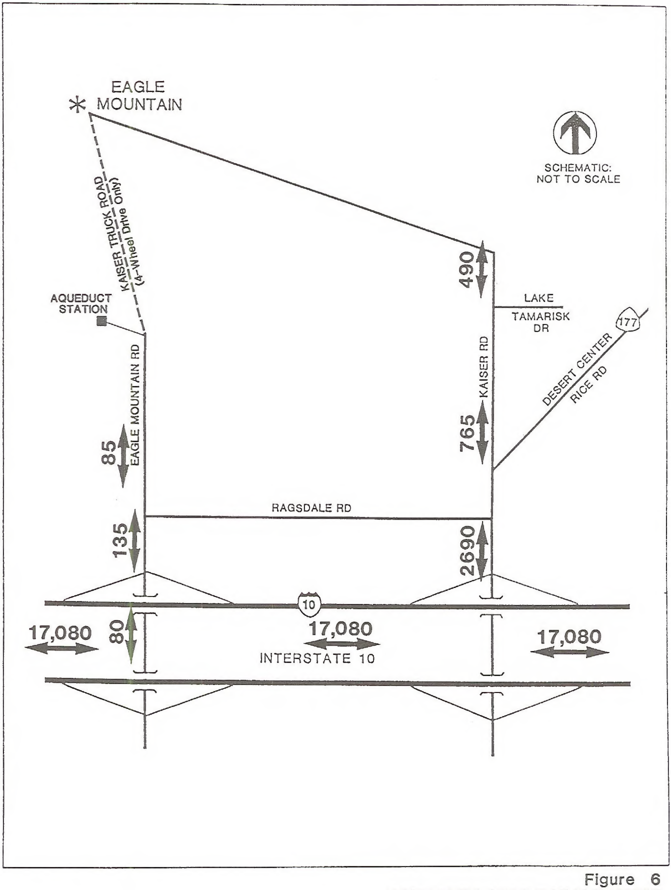

Figure 6
FORECAST 1995 DAILY TRAFFIC
WITHOUT PROJECT

5. Project Description and Impact Analysis

5. Project Description and Impact Analysis

The proposed Eagle Mountain landfill is expected to begin operations in the early 1990s, but it will not be operating at capacity until 1995. The project description and impact analysis focus on 1995, as this is the earliest date at which the project can become fully operational. The landfill will accept 20,000 tons of refuse per day when operating at capacity, with 16,000 tons per day delivered by rail, and the remainder arriving at the site via truck.

The project will eventually require realignment of both the Eagle Mountain Railroad and the Kaiser Truck Road. The proposed realignments will not take place until the facility is receiving more than a single refuse train per day. The proposed realignments are displayed in Figure 7. The impacts of these realignments will also be discussed in this section of the report.

This section of the report will follow the same format previously used, wherein the characteristics of the project and their impacts related to rail will be presented first, followed by the characteristics and impacts related to the roadway system. The impacts related to the proposed railroad and roadway realignments will be discussed last.

Project Description - Rail Related Characteristics

A total of 16,000 tons of refuse will be delivered to the site daily via the rail mode of transport, taking advantage of the existing rail spur providing service to the site. The spur, formerly used to carry iron ore from the site to various off-site locations, was originally designed to service trains significantly heavier than the proposed refuse unit trains.

The unit trains will consist of one or more diesel locomotives pulling fourteen articulated rail cars. The rail cars will be "twin stack," as manufactured by Gunderson and Greenbriar Intermodal. Each car will be 256 feet long and consist of five articulating units, each with a well-type configuration capable of holding two 40-foot by 8-foot by 8-foot containers (for a total capacity of ten containers). The estimated length of the overall train, including the engine(s), is 4,000 feet or less. A single train could transport approximately 3,500 tons of waste.

A total of six transfer stations is expected to serve as locations where refuse will be consolidated and loaded into containers for delivery to the site. The locations of these transfer stations were previously presented in Figure 2 (Chapter 1). The quantity of waste to be handled at each transfer station and the resulting average number of shipments per day and per week are presented in Table 7. Although an average of 4.7 shipments per day is projected, the marshalling yard will be equipped to handle the arrival of up to six trains per day.

DKS *Associates*

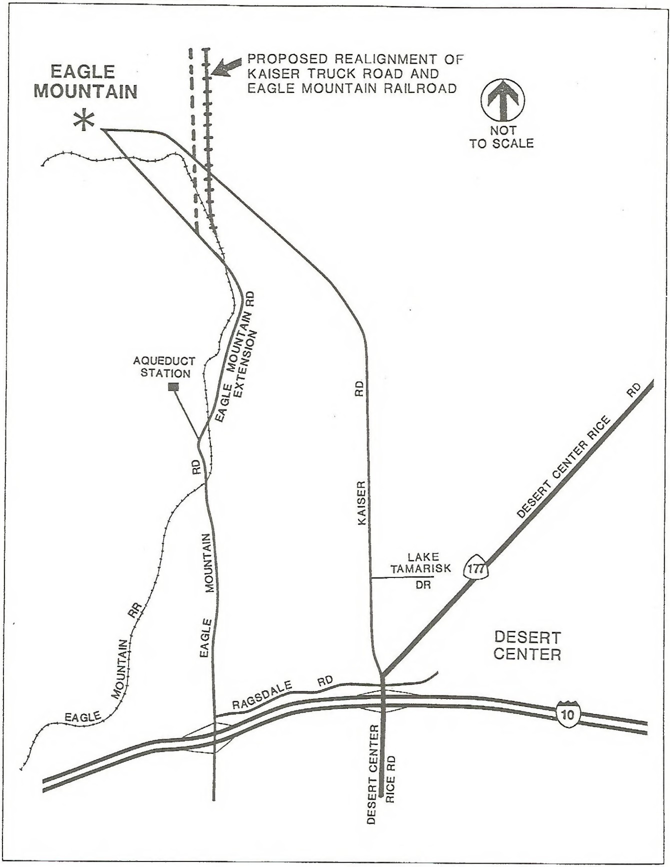

Figure 7
PROPOSED ROADWAY AND RAILROAD ACCESS

Table 7
Average Number of Shipments by Transfer Station

Station	Tons per day (Average)	Average Daily Number of Shipments	Average Weekly Number of Shipments
San Bernardino County	2,000	0.6	3.5
La Verne	2,000	0.6	3.5
Industry	2,000	0.6	3.5
Irwindale	3,000	0.9	5.1
Los Angeles	5,000	1.4	8.6
Orange County	2,000	0.6	3.5

Estimated Project Impacts on At-Grade Crossing Delays

The shipments from each transfer station would use one or more of the rail segments defined to reach the landfill. For instance, the San Bernardino County transfer station would utilize Segment 1 of the rail system to transport refuse to the Eagle Mountain landfill, and the resultant delays would apply only to traffic using at-grade crossings along this rail segment.

The La Verne and Irwindale transfer stations could potentially ship refuse to the landfill via more than a single route. For instance, the containers from the La Verne transfer station could be shipped directly west to Eagle Mountain via Segment 1 and Segment 6, or shipments from this transfer station could also be routed through Bassett Junction to the landfill, via Segments 1, 2, 3, 7, and 8. The routes analyzed in the delay analysis are presented in Table 8.

Each shipment to the landfill would necessitate two one-way train trips. A shipment of full containers to the site and a return train delivering empty containers for reuse at the transfer station would both be required. Multiplying the average daily number of trains by the estimated at-grade crossing delays for each segment traversed on a particular route yields the average daily delay caused by shipments from each transfer station. The average daily delays by transfer station are summarized in Table 9.

Table 8
Routes from Transfer Stations to Eagle Mountain Landfill

Transfer Station	SEGMENTS USED 1	2	3	4	5	6	7	8
San Bernardino County	X							
La Verne (Route 1)	X					X		
La Verne (Route 2)	X	X	X				X	X
Industry	X	X						
Irwindale (Route 1)	X					X	X	
Irwindale (Route 2)	X	X	X					X
Los Angeles	X	X	X	X				
Orange County	X	X	X	X	X			

Table 9
Delays Caused by Shipments from Each Transfer Station

Transfer Station	Resulting Average Daily Delay (Hours)
San Bernardino County	1.39
La Verne (Route 1)	43.42
La Verne (Route 2)	11.63
Industry	1.90
Irwindale (Route 1)	76.55
Irwindale (Route 2)	6.01
Los Angeles	9.07
Orange County	47.65

The cumulative delay, caused by the passage of a single train at individual crossings on the primary segment under future conditions with the project, ranges from 0.01 hours to 0.21 hours at the various crossings on the primary segment. This is well below the two-hour delay threshold defined as indicating a deficient condition, indicating that the project causes no significant impact on the primary rail segment.

The shipments from the La Verne and Irwindale transfer stations cause significantly lower delays when routed west through Bassett Junction, then east on the Yuma/Alhambra line to Eagle Mountain. Assuming this routing, shipments from the Orange County transfer station would cause much greater at-grade crossing delays than the other proposed transfer stations. This is a result of the proposed rail route, which traverses some of the most heavily urbanized areas in the region and also requires slower train speeds.

The delays from the Orange County shipments are still relatively minor compared to the delays projected for facilities such as the Ports of Los Angeles and Long Beach; the SCAG report which assesses the potential for rail transport of waste to distant locations states that the high train volumes, slow speeds, and proposed daytime operations result in delay estimates of 100 to 300 vehicle-hours of delay at individual grade crossings.[1] This report also categorizes delays of the magnitude estimated for the Eagle Mountain landfill as "relatively minor."

Another perspective on the significance of the expected total delay incurred along the rail line is also mentioned in the previously cited SCAG report. The report indicates that the approximate average daily delay at the intersection of two arterials carrying 20,000 vehicles per day would be an estimated 300 hours of delay, or five times the total average daily delay caused by the transport of refuse via rail to the Eagle Mountain landfill.

In summary, if the optimal routes from the Irwindale and La Verne transfer stations were used, the total average daily delay at the rail line at-grade crossings is 77.6 hours. Total delay along the primary segment, from Eagle Mountain to Colton, would average approximately 11 hours per day, with a maximum average delay at any grade crossing of between one and two minutes per vehicle along this segment.

Estimated Project Impacts on At-Grade Crossing Hazard Indices

The proposed landfill at Eagle Mountain also increases the hazards inherent whenever a railroad line crosses a highway at-grade. The increase occurs because of the projected increase in the amount of train traffic along the various rail lines. This section quantifies the expected change by recalculating the hazard indices previously presented for future conditions without the project, including the increased rail traffic, and compares the recalculated hazard index values and rankings to the values and rankings obtained in the analysis of future conditions without the project.

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[1] *The Feasibility of Hauling Solid Waste by Railroad from the San Gabriel Valley to Remote Disposal Sites*, Southern California Association of Governments, April, 1988.

The recalculated hazard indices ranged from a low of 330 (Cleveland Street in Riverside County east of Coachella) to a high of 275,600 (once again at Pine Street in Pomona). The highest ranking crossing on the primary analysis segment is again Hunts Lane. Although the hazard index value increased by nearly 19%, from 64,800 to 77,000, this location is still ranked 11th overall among the crossings analyzed.

The calculated index for Monroe Street in Indio under future conditions with the project is 37,500, which ranks 22nd overall among crossings analyzed in this study. The at-grade crossing at 50th Avenue in Coachella Valley has a hazard index of 10,500 under future build conditions and is ranked 47th overall. This is the same ranking noted under no-build conditions.

The overall effect of the project on the hazard indices of the study area at-grade crossings is to increase the values by 10 to 30 percent, without significantly altering the overall rankings of the various at-grade crossings. The reason no major change in the overall rankings of the various at-grade crossings occurs is that the net increases in train traffic resulting from the project, while different for the various rail segments analyzed, tend to be proportional to the baseline train traffic on each segment.

Segment 1, where the greatest increase in train traffic occurs, is also the most heavily traveled segment initially. The proportional effect of nine trains on the hazards along this segment are therefore very similar to the proportional effect of one or two trains on less heavily traveled rail segments in Orange or Los Angeles counties.

Summary of Rail Related Impacts

The project related usage of rail transport is expected to have a minimal impact on the rail lines and surrounding infrastructure. When operating at maximum daily capacity, the project will receive an average of four to five shipments of refuse per day, generating double this number of trains, as each shipment will require both the delivery of full containers and the return of empty containers. All 9.4 trains per day will utilize the primary analysis segment (Segment 1), with lesser increases in train traffic along each of the other segments included in the analysis.

The impact of the project on delays to vehicles using at-grade crossings is minimal. Average vehicle delays of one to two minutes can be expected for each train in Riverside County, and fewer than ten vehicles would be affected at any one crossing in Riverside County other than Monroe Street in Indio, where 15 vehicles would be delayed by the passage of a single refuse train.

A total of less than 80 hours of delay to vehicles encountering refuse unit trains when using at-grade crossings is expected on an average daily basis. Most of this delay would occur along Segment 5, servicing northern Orange County, where a combination of high traffic volumes and low train speeds result in much higher delays than along other rail segments.

The project is not expected to have a significant impact on safety within the study area. The forecast increase in background highway traffic volumes between 1989 and 1995 has a much greater effect on the calculated hazard indices for the at-grade crossings analyzed than the project related increase in train traffic. The project will not significantly affect the ranking of crossings along the primary analysis segment when compared to other crossings included in the safety analysis, nor will any Riverside County crossing reach the top seven percent threshold defined as indicating a deficient condition. Therefore, there is no significant rail safety impact associated with this project.

PROJECT DESCRIPTION AND IMPACTS - HIGHWAY SYSTEM RELATED CHARACTERISTICS

The proposed landfill will impact the highway system in two primary ways. Approximately 25% of the waste delivered to the site will be transported via truck, and the project will also generate new employment at Eagle Mountain, both of which will impact the highway system in the vicinity of the project. Each of these effects will be examined in detail.

The project is expected to accept 4,000 tons of refuse delivered via truck transport on a daily basis. It is anticipated that half of this waste will come from within Riverside County and the other half will be transported to the landfill via truck from San Bernardino County. The typical trucks arriving at the site are expected to be carrying containers identical to the containers arriving by train. A small amount of trash from local areas may arrive via conventional transfer trailers.

A total of approximately 200 truck shipments per day would be required to deliver refuse to the landfill in intermodal transfer containers. The trucks could arrive at any time of day, as the marshalling yard will be operational 24 hours a day. This would result in an average of just over eight shipments arriving each hour. A more conservative scenario would be the arrival of truck shipments during daylight hours only (12 to 13 hours daily). An average of 16 shipments arriving each hour results from this more conservative assumption. This more conservative estimate will be utilized in the intersection operations analysis.

All trucks would be required to use Kaiser Truck Road via Eagle Mountain Road under normal circumstances for shipment delivery. Almost all of the waste is expected to come from the more urbanized western regions of Riverside and San Bernardino counties, where most of the refuse from these counties is generated. The intersection operational analysis that is presented in this section is based on the assumption that only one shipment during the peak hour will arrive from east of the site.

The landfill is also expected to employ 150 people at the site itself. Specific trip generation data is not available for a facility with the unique characteristics of the proposed Eagle Mountain landfill. The trip generation characteristics of many land use types have been studied, however, and a review of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, Fourth Edition* (Institute of Transportation Engineers, 1987) suggests that the land use category General Light Industry (ITE land use code 110) is most applicable in this instance.

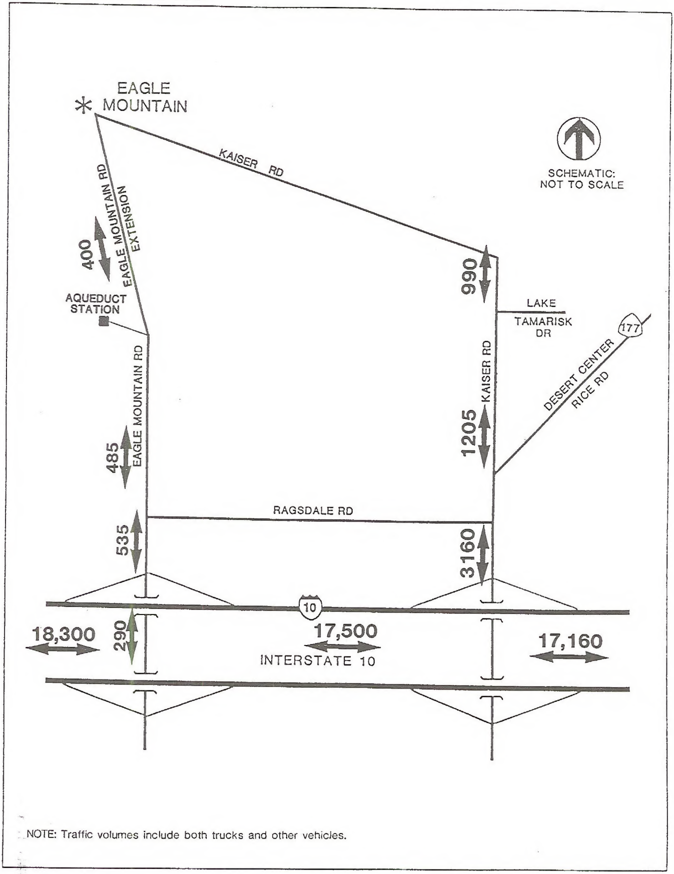
The daily traffic volume related to traffic other than the trucks delivering refuse to the site is slightly less than 500 total daily trips, or 250 inbound and 250 outbound trips. Based on relative population densities, it is estimated that 85% of the trips will be to and from the west, while 10% have origins or destinations to the east, and 5% travel to and from the north on Desert Center Rice Road. These trips would include both employee travel to and from work, and trips made by delivery vehicles, service vehicles, and other traffic to and from the site.

Although long-term relocation of employees would likely result in some trips terminating within the study area, all traffic was conservatively assumed to exit the study area. For instance, the residential area located near the landfill is going to be refurbished, and the relocation of employees to this area could significantly reduce the peak hour traffic associated with the landfill. All traffic other than trucks carrying refuse will be required to access the site via Kaiser Road and the Desert Center Rice Road/I-10 interchange. This policy will require enforcement in the form of a manual access gate at the entrance to the Kaiser Truck Road or some other form of positive control.

The assumptions outlined above form the basis for distribution of project related traffic to the roadway network for both daily and peak hour conditions. Figure 8 presents the expected 1995 build condition daily traffic volumes on study area roadways.

Project Impacts on Roadway Segment Operating Conditions

The roadway segment operations analysis has been repeated for future 1995 conditions with the project. The highest hour of site specific traffic generation was used to estimate project peak hour impacts, as the peak hour of project traffic generation is likely to control the overall peak hour on roadways within the study area. The site generated traffic was then added to the peak hour traffic volumes at each analysis location under no-build conditions, yielding the most conservative possible peak hour traffic volumes under project build conditions. The results of the operations analysis are summarized in Table 10, and indicate that acceptable roadway operations will continue to occur on all segments analyzed. Therefore, the project has no significant impact on roadway segment operations.



NOTE: Traffic volumes include both trucks and other vehicles.

Figure 8
FORECAST 1995 DAILY TRAFFIC
WITH PROJECT

Table 10
1995 Conditions with Project
Roadway Segment LOS Analysis Summary

Segment	Peak Hour Volume	LOS
Eagle Mountain Rd. n/o Ragsdale Rd.	44	A
Eagle Mountain Rd. n/o Aqueduct Station	29	A
Kaiser Rd. n/o Desert Center Rice Rd.	179	A
Kaiser Rd. n/o Lake Tamarisk Dr.	176	A

Project Impacts on Intersection Operating Conditions

The highest hour of site specific traffic generation was used to estimate project peak hour impacts, as the peak hour of project traffic generation is likely to control the overall peak hour at intersections within the study area. The site generated traffic was then added to the peak hour traffic volumes at each analysis location under no-build conditions, yielding the most conservative possible peak hour traffic volumes under project build conditions.

During the peak hour, a total of 116 trips is expected to enter and exit the site in addition to the previously described truck trips related to the delivery of refuse. A total of 81 trips would leave the site, while 35 vehicles would be entering the site. The same directional distribution of trips described for daily traffic was used to distribute the peak hour traffic.

Operations analyses were again conducted for each study area intersection, and no significant degradation in operations is anticipated as a result of the project related traffic. All traffic movements analyzed would continue to operate at Level of Service (LOS) A, with minimal delays and no lack of capacity.

Sufficient excess roadway capacity exists to serve all increases in traffic volumes in the foreseeable future. Background growth in traffic unrelated to specific developments would likely occur at a rate of one to two percent per year or less and such growth could be accommodated for decades. Additional increases in traffic of two percent per year for 40 years would result in a doubling of traffic volumes, which could easily be accommodated by the existing roadway infrastructure.

Specific developments generating additional traffic would be required to study the impacts of their own traffic and mitigate any deficiencies identified.

Summary of Highway Related Impacts

The project is expected to generate a total of approximately 900 new trips either to or from the proposed landfill on a daily basis. This total number of trips includes 800 new truck trips each day, with 200 inbound trucks delivering refuse and 200 outbound trucks carrying away empty containers, and nearly 500 other new trips.

During the peak hour of daily traffic to and from the site, an estimated total of just under 150 trips would be generated. This would include 16 refuse trucks both entering and exiting the site during the course of the hour, and 116 other trips comprised of arriving and departing employees, delivery and service traffic, and any other project related traffic. The majority of this traffic is expected to travel to and from the west.

Operations analyses at study area intersections indicate that excellent operating conditions will continue to exist in the study area. All study area traffic movements will continue to experience LOS A conditions.

IMPACTS RELATED TO REALIGNMENT OF THE EAGLE MOUNTAIN RAILROAD AND KAISER TRUCK ROAD

The current terminus of the Eagle Mountain Railroad is located at the western end of the proposed landfill, while the expected long-term location of the marshalling yard for the landfill will be at the eastern end of the project. Current alternatives being examined include immediate relocation of the Eagle Mountain Railroad terminus to the eastern end of the project, or construction of a temporary marshalling yard that will be utilized until the western end of the landfill's capacity is exhausted. Assuming the landfill is accepting 20,000 tons of refuse daily by 1995, this would occur in approximately 25 years, or in the year 2020. Landfill activities would then move to the eastern side of the project. This proposed realignment would create roadway and rail crossings of Kaiser Road, which serves the community of Eagle Mountain, including the local high school (Eagle Mountain Junior and Senior High School).

If the railroad were relocated immediately, the projected build condition traffic volumes on Kaiser Road and train traffic can be used to calculate the hazard index at this location. Table 11 presents the projected hazard indices at this location for a range of at-grade crossing protection devices.

Table 11
Hazard Index at Proposed Kaiser Road At-Grade Crossings

Type of Protection	Hazard Index
Crossbucks	5,358
Wigwag	1,821
Flashing Lights	1,072
Automatic Gate	589

Even with minimal protection present, in the form of warning signs only, the hazard index at this location is very low. Compared to the other 95 locations examined, this crossing would rank 66th (with 1st being most hazardous and 95th safest). The presence of school children nearby makes the installation of automatic gates at this proposed at-grade crossing highly desirable. Provision of automatic gates at this location would make this one of the lowest hazard at-grade crossings in the study area (ranked 95th of 96 locations).

Realignment of the Kaiser Truck Road will create a new intersection at Kaiser Road. This intersection will carry relatively few vehicles, and could be configured in several different ways. The optimal configuration would be construction as a two-way stop, with the stop signs placed on the lower volume legs of the intersection, Kaiser Road. The traffic volumes on all approaches to this intersection are low enough that the stop signs could instead be placed on the Kaiser Truck Road, or the intersection could even be configured as a four-way stop, with stop signs on all four approaches to the intersection. Regardless of the configuration, LOS A operating conditions would result. Installation of a traffic signal would not be warranted per guidelines developed by the California Department of Transportation (Caltrans) and is therefore not recommended.

6. Project Alternatives

6. Project Alternatives

Two alternatives to the project have been identified and analyzed in this study. The first alternative eliminates all deliveries of refuse to the site by truck, without affecting shipments via rail at all. The second alternative would reduce the quantity of material received daily by reducing shipments by both rail and truck.

RAIL ACCESS ONLY ALTERNATIVE

The primary project alternative identified eliminates altogether the transport of refuse to the landfill via truck. All deliveries to the site would be made by rail, and the overall quantity of waste handled at the site on a daily basis would be reduced by 20% to 16,000 tons daily.

The proposed project alternative would primarily affect the impacts of the project on the highway network. There would be no change in the average number of daily unit trains delivering refuse to the site, and service would be provided along the same routes described previously in the project description section of this report.

The proposed elimination of refuse deliveries to the site by truck would not change the amount of highway traffic using at-grade crossings along the rail routes, nor would it affect the average number of trains using these crossings. The amount of delay caused by the project at these crossings is unchanged from the delays caused by the proposed project itself. As previously described, average delays of one to two minutes per vehicle would be incurred at each grade crossing by the passage of a refuse train.

Similarly, the project alternative would result in the same hazard rankings for each of the at-grade crossings studied. The effect of the project alternative is again negligible in terms of increasing the ranking of crossings along the primary analysis segment between Colton and Eagle Mountain. The changes caused by increases in highway volumes at these crossings resulting-from regional growth are greater than the changes caused by the project itself.

The proposed project alternative would significantly reduce the overall volume of traffic to the site and would also decrease the percentage of truck traffic generated by the landfill. Eliminating the 400 two-way truck trips delivering refuse to the site drops the overall number of trip ends generated by the landfill from 1,300 trip ends to 500 trip ends daily. Truck trips to the site would be made on an incidental basis only, for purposes such as supply deliveries. All of the benefit of this reduction in truck traffic would be evident along the Kaiser Truck Road and on Eagle Mountain Road between the Kaiser Road and the I-10 interchange, the proposed route for delivery of refuse to the site.

Traffic volumes on Kaiser Road and Desert Center Rice Road would remain unchanged from the conditions described for the primary project. Intersection operations at the locations analyzed would continue to be excellent, as the proposed project alternative would not cause any further increase in traffic beyond that projected for the project.

REDUCED OPERATIONS ALTERNATIVE

The second alternative to the proposed project will reduce the quantity of material shipped by rail from 16 tons daily to 14 tons daily and will also reduce the quantity of material shipped by truck from four tons daily to two tons daily.

The reduction in the quantity of material shipped by rail would result in an average of 4.1 trains per day delivering refuse to the site. The amount of daily delay would be reduced proportionately, while the per train delays would remain unchanged. Similarly, the calculated values of the hazard indices would be reduced by 13% along the primary segment, as the hazard index is directly proportional to the daily train volume. Similar but smaller effects of this alternative would occur along the secondary rail segments.

The reduction in truck traffic would again affect only I-10, Eagle Mountain Road, and the Eagle Mountain Road Extension. Two hundred two-way truck trips would be eliminated, and the overall number of trip ends generated by the project would drop from 1,300 to 900 trip ends per day.

Level of service A conditions would still prevail for all traffic movements analyzed in the study area.

APPENDIX A
At-Grade Crossing Existing Conditions

EAGLE MOUNTAIN

Existing Conditions

DELAY ANALYSIS

P89246x0

25-Jan-90

File: RAIL1A.WK1

SAFETY ANALYSIS

STREET NAME	LANES	TRAIN SPEED (mph)	1989 ADT	1989 ELAPSED TIME (min)	1989 TOTAL VEH. DELAYED (veh)	1989 TOTAL DELAY TIME (veh-hrs)	1989 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	EXISTING HAZARD INDEX
SEGMENT 1: EAGLE MOUNTAIN TO COLTON/SAN BERN. TRNSFR. STN.											
Parkside Dr.	2	65	270	1.5	0.2	0.00	0.0	31	8	0.2	1,674
Bay Dr.	2	65	550	1.5	0.5	0.01	1.2	31	8	0.2	3,410
Cleveland St.	2	65	60	1.5	0.1	0.00	0.0	31	9	0.11	205
66th Ave.	2	65	3,130	1.6	2.9	0.03	0.6	31	9	0.11	10,673
62nd Ave.	2	65	490	1.5	0.4	0.00	0.0	31	9	0.11	1,671
58th Ave.	2	65	630	1.5	0.6	0.01	1.0	31	8	0.2	3,906
Airport Blvd.	2	65	4,590	1.6	4.3	0.04	0.6	31	9	0.11	15,652
52nd Ave.	2	65	990	1.5	0.9	0.01	0.7	30	9	0.11	3,267
5th St.	2	65	205	1.5	0.2	0.00	0.0	28	8	0.2	1,148
50th Ave.	2	65	1,137	1.5	1.0	0.01	0.6	28	8	0.2	6,367
Dillon Rd.	2	65	5,800	1.6	5.5	0.05	0.5	31	9	0.11	19,778
Monroe St.	2	30	7,422	2.6	11.8	0.17	0.9	28	9	0.11	22,860
Tipton	2	40	90	1.9	0.1	0.00	0.0	36	8	0.2	648
Broadway	2	40	1,490	2.0	1.8	0.03	1.0	36	9	0.11	5,900
Apache Trail	2	40	3,020	2.0	3.7	0.05	0.8	6	9	0.11	1,993
Hargrave	2	40	3,010	2.0	3.7	0.05	0.8	35	9	0.11	11,589
San Gorgonio	2	40	2,950	2.0	3.6	0.05	0.8	34	9	0.11	11,033
22nd St.	2	40	5,669	2.1	7.2	0.09	0.8	35	9	0.11	21,826
North Sunset	2	40	530	1.9	0.6	0.01	1.0	35	9	0.11	2,041
Highland Springs	2	40	230	1.9	0.3	0.00	0.0	36	9	0.11	911
Pennsylvania	2	50	500	1.7	0.5	0.01	1.2	35	9	0.11	1,925
Beaumont St.	2	50	3,400	1.8	3.6	0.04	0.7	35	9	0.11	13,090
California	2	50	1,150	1.7	1.2	0.01	0.5	35	9	0.11	4,428
Veile Ave.	2	50	400	1.7	0.4	0.01	1.5	35	8	0.2	2,800
San Timoteo Canyon Rd.	2	50	360	1.7	0.4	0.00	0.0	36	9	0.11	1,426

EAGLE MOUNTAIN

Existing Conditions

DELAY ANALYSIS

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SAFETY ANALYSIS

STREET NAME	LANES	TRAIN SPEED (mph)	1989 ADT	1989 ELAPSED TIME (min)	1989 TOTAL VEH. DELAYED (veh)	1989 TOTAL DELAY TIME (veh-hrs)	1989 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO- TEC- TION	RELATIVE HAZARD (Pf)	EXISTING HAZARD INDEX
Live Oak Canyon	2	40	770	2.0	0.9	0.01	0.7	6	9	0.11	508
Alessandro Rd.	2	40	3,290	2.0	4.0	0.05	0.8	50	9	0.11	18,095
San Timoteo Canyon Rd.	2	40	5,146	2.1	6.5	0.08	0.7	50	9	0.11	28,303
Beaumont Ave.	2	40	826	2.0	1.0	0.01	0.6	50	9	0.11	4,543
Whittier Ave.	2	40	150	1.9	0.2	0.00	0.0	50	9	0.11	825
Hunts Ln.	2	50	10,158	1.9	12.0	0.11	0.6	50	9	0.11	55,869
						0.94					
SEGMENT 2: KAISER SPUR TO INDUSTRY TRANSFER STATION											
Milliken Ave.	6	65	20,000	1.6	19.3	0.18	0.6	35	9	0.11	77,000
Vineyard Ave.	4	60	18,974	1.8	20.0	0.18	0.5	35	9	0.11	73,050
						0.36					
SEGMENT 3: INDUSTRY TRANS. STN. TO INDUSTRY BRANCH POINT											
Nogales St.	5	60	28,343	1.8	30.7	0.25	0.5	28	9	0.11	87,296
Sunset Ave.	5	60	16,026	1.7	16.1	0.16	0.6	28	9	0.11	49,360
						0.41					
SEGMENT 4: INDUSTRY BRANCH POINT TO S. PACIFIC'S L.A. YARD											
Ramona	4	30	31,000	2.9	56.3	0.64	0.7	28	9	0.11	95,480
Valley	4	25	19,508	3.0	36.9	0.58	0.9	28	9	0.11	60,085
						1.22					

EAGLE MOUNTAIN

Existing Conditions

DELAY ANALYSIS

P89246x0

25-Jan-90

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SAFETY ANALYSIS

STREET NAME	LANES	TRAIN SPEED (mph)	1989 ADT	1989 ELAPSED TIME (min)	1989 TOTAL VEH. DELAYED (veh)	1989 TOTAL DELAY TIME (veh-hrs)	1989 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	EXISTING HAZARD INDEX
SEGMENT 5: SOUTHERN PACIFIC'S L.A. YARD to N. ORANGE COUNTY											
Washington Blvd.	4	10	24,150	6.4	100.9	3.11	1.8	NA	NA	NA	ERR
Santa Fe Ave.	4	10	15,300	6.0	59.7	2.11	2.1	NA	NA	NA	ERR
25th Street	4	10	4,500	5.6	16.3	0.67	2.5	NA	NA	NA	ERR
E. Alameda St.	2	10	8,000	6.0	31.2	1.09	2.1	NA	NA	NA	ERR
41st Street	2	10	9,920	6.2	39.8	1.31	2.0	24	4	0.34	80,947
Vernon Ave.	5	10	12,100	5.8	45.5	1.75	2.3	4	4	0.34	16,456
55th St.	2	10	6,190	5.9	23.5	0.86	2.2	28	4	0.34	58,929
Slauson Ave.	4	10	28,300	6.7	122.3	3.53	1.7	28	8	0.2	158,480
Gage Ave.	3	20	17,100	3.6	39.3	0.69	1.1	28	8	0.2	95,760
Florence Ave.	6	20	26,310	3.5	58.6	1.12	1.1	28	8	0.2	147,336
Nadeau St.	5	20	12,500	3.3	26.2	0.56	1.3	28	9	0.11	38,500
Santa Fe Ave.	4	15	8,900	4.1	23.4	0.64	1.6	20	9	0.11	19,580
Long Beach Blvd.	4	15	18,300	4.4	51.6	1.23	1.4	20	9	0.11	40,260
State St.	4	20	12,000	3.4	25.5	0.53	1.2	10	9	0.11	13,200
Otis Ave.	4	20	12,000	3.4	25.5	0.53	1.2	30	9	0.11	39,600
Atlantic Ave.	6	20	25,000	3.5	55.3	1.07	1.2	10	9	0.11	27,500
Garfield Ave.	6	20	24,100	3.5	53.1	1.04	1.2	10	9	0.11	26,510
Firestone Blvd.	8	20	43,100	3.6	99.3	1.80	1.1	6	9	0.11	28,446
Paramount Blvd.	6	20	24,700	3.5	54.6	1.06	1.2	10	9	0.11	27,170
Lakewood Blvd.	6	20	34,000	3.7	78.8	1.40	1.1	10	9	0.11	37,400
Woodruff Ave.	4	20	14,000	3.4	30.1	0.61	1.2	4	9	0.11	6,160
Studebaker Rd.	4	20	12,220	3.4	26.0	0.54	1.2	6	8	0.2	14,664
Pioneer Blvd.	4	20	14,950	3.4	32.4	0.64	1.2	6	9	0.11	9,867
San Antonio Blvd.	4	20	17,600	3.5	38.9	0.74	1.1	2	9	0.11	3,872

EAGLE MOUNTAIN

Existing Conditions

DELAY ANALYSIS

SAFETY ANALYSIS

P89246x0

25-Jan-90

File: RAIL1A.WK1

STREET NAME	LANES	TRAIN SPEED (mph)	1989 ADT	1989 ELAPSED TIME (min)	1989 TOTAL VEH. DELAYED (veh)	1989 TOTAL DELAY TIME (veh-hrs)	1989 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	EXISTING HAZARD INDEX
Rosecrans Ave.	6	20	28,000	3.5	62.9	1.19	1.1	6	9	0.11	18,480
Artesia Blvd.	6	20	25,000	3.5	55.3	1.07	1.2	12	9	0.11	33,000
Knott Ave.	4	20	20,000	3.6	45.1	0.83	1.1	12	9	0.11	26,400
Western Ave.	4	20	15,000	3.4	32.6	0.64	1.2	12	9	0.11	19,800
Beach Blvd.	6	20	34,000	3.7	78.8	1.40	1.1	30	9	0.11	112,200
Stanton Ave.	4	20	11,600	3.4	24.5	0.51	1.2	30	9	0.11	38,280
						34.27					
SEGMENT 6: COLTON YARD to LA VERNE TRANSFER STATION											
Pepper Ave.	2	10	10,000	6.2	40.3	1.32	2.0	2	8	0.2	4,000
Sycamore Ave.	2	10	3,500	5.7	12.8	0.51	2.4	2	3	0.34	2,380
Riverside Ave.	4	10	12,000	5.9	45.7	1.70	2.2	2	9	0.11	2,640
Alder Ave.	2	10	4,100	5.7	15.1	0.59	2.3	2	9	0.11	902
Mango Ave.	2	10	6,000	5.9	22.7	0.84	2.2	2	8	0.2	2,400
Sierra Ave.	4	10	12,300	5.9	47.0	1.74	2.2	2	8	0.2	4,920
Juniper Ave.	2	10	5,200	5.8	19.5	0.74	2.3	2	9	0.11	1,144
Milliken Ave.	2	10	5,000	5.8	18.7	0.71	2.3	2	9	0.11	1,100
Haven Ave.	2	10	7,400	6.0	28.6	1.01	2.1	2	9	0.11	1,628
Archibald Ave.	4	10	3,400	5.6	12.2	0.51	2.5	2	9	0.11	748
Base Line St.	4	10	8,000	5.7	29.6	1.16	2.4	2	9	0.11	1,760
Grove Ave.	4	10	8,800	5.8	32.8	1.27	2.3	2	9	0.11	1,936
Campus Ave.	4	10	4,800	5.6	17.4	0.71	2.4	2	3	0.34	3,264
Euclid Ave.	6	10	24,600	6.1	97.4	3.41	2.1	2	9	0.11	5,412
San Antonio Ave.	4	10	7,400	5.7	27.3	1.08	2.4	2	3	0.34	5,032
Mountain Ave.	4	10	13,400	6.0	51.6	1.88	2.2	2	9	0.11	2,948

EAGLE MOUNTAIN

Existing Conditions

DELAY ANALYSIS

P89246x0

25-Jan-90

File: RAIL1A.WK1

SAFETY ANALYSIS

STREET NAME	LANES	TRAIN SPEED (mph)	1989 ADT	1989 ELAPSED TIME (min)	1989 TOTAL VEH. DELAYED (veh)	1989 TOTAL DELAY TIME (veh-hrs)	1989 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	EXISTING HAZARD INDEX
Benson Ave.	2	10	3,500	5.7	12.8	0.51	2.4	2	1	1	7,000
Central Ave.	4	10	14,000	6.0	54.1	1.95	2.2	2	9	0.11	3,080
Towne Ave.	2	10	7,961	6.0	31.1	1.08	2.1	2	9	0.11	1,751
Garey Ave.	4	10	11,700	5.9	44.5	1.66	2.2	4	9	0.11	5,148
Pine St.	2	10	7,961	6.0	31.1	1.08	2.1	28	1	1	222,908
Fulton Rd.	2	10	11,700	6.4	48.3	1.50	1.9	8	9	0.11	10,296
White Ave.	4	10	9,103	5.8	34.0	1.31	2.3	8	9	0.11	8,011
D Street	2	10	5,000	5.8	18.7	0.71	2.3	4	1	1	20,000
						28.98					
SEGMENT 7: LA VERNE TRANS. STN. to IRWINDALE TRANS. STN.											
Sunflower Ave.	2	10	4,320	5.7	16.0	0.62	2.3	4	9	0.11	1,901
Covina Blvd.	2	10	3,500	5.7	12.8	0.51	2.4	4	9	0.11	1,540
Barranca Ave.	2	10	9,000	6.1	35.7	1.20	2.0	4	8	0.2	7,200
Hollenbeck Ave.	2	10	7,500	6.0	29.1	1.03	2.1	4	8	0.2	6,000
Azusa Ave.	6	10	12,900	5.8	48.3	1.89	2.3	4	9	0.11	5,676
Irwindale Ave.	2	10	6,217	5.9	23.6	0.87	2.2	4	8	0.2	4,974
						6.12					
SEGMENT 8: IRWINDALE TRANS. STN. to INDUSTRY BRANCHPOINT											
Ramona Blvd./Downing Av.	4	20	15,000	3.4	32.6	0.64	1.2	4	9	0.11	6,600
Francisquito Ave.	4	20	15,000	3.4	32.6	0.64	1.2	4	9	0.11	6,600
						1.28					

APPENDIX B
Traffic Count Data

WEST COAST TRAFFIC COUNTERS

Location: EAGLE MOUNTAIN RD. BETWEEN I-10 RAMPS
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
Mid - 12:59	0	1	1
1:00 - 1:59	0	2	2
2:00 - 2:59	0	5	5
3:00 - 3:59	0	2	2
4:00 - 4:59	2	0	2
5:00 - 5:59	0	0	0
6:00 - 6:59	0	0	0
7:00 - 7:59	0	1	1
8:00 - 8:59	0	3	3
9:00 - 9:59	0	2	2
10:00 - 10:59	0	6	6
11:00 - 11:59	1	3	4
12:00 - 12:59	0	1	1
13:00 - 13:59	1	0	1
14:00 - 14:59	0	4	4
15:00 - 15:59	2	4	6
16:00 - 16:59	0	3	3
17:00 - 17:59	0	2	2
18:00 - 18:59	0	7	7
19:00 - 19:59	0	1	1
20:00 - 20:59	1	2	3
21:00 - 21:59	0	0	0
22:00 - 22:59	0	2	2
23:00 - 23:59	0	5	5
ADT :	7	56	63
Factored ADT :	7	56	63
AM Peak Time :	4:00- 5:00	10:15-11:15	10:15-11:15
AM Peak Volume:	2	8	9
PM Peak Time :	14:30-15:30	18:00-19:00	14:30-15:30
PM Peak Volume:	2	7	8

WEST COAST TRAFFIC COUNTERS

Location: EAGLE MOUNTAIN RD. BETWEEN I-10 RAMPS
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
Mid - 12:14	0	0	0
12:15 - 12:29	0	1	1
12:30 - 12:44	0	0	0
12:45 - 12:59	0	0	0
Hour Total	0	1	1
1:00 - 1:14	0	0	0
1:15 - 1:29	0	2	2
1:30 - 1:44	0	0	0
1:45 - 1:59	0	0	0
Hour Total	0	2	2
2:00 - 2:14	0	5	5
2:15 - 2:29	0	0	0
2:30 - 2:44	0	0	0
2:45 - 2:59	0	0	0
Hour Total	0	5	5
3:00 - 3:14	0	2	2
3:15 - 3:29	0	0	0
3:30 - 3:44	0	0	0
3:45 - 3:59	0	0	0
Hour Total	0	2	2
4:00 - 4:14	0	0	0
4:15 - 4:29	0	0	0
4:30 - 4:44	0	0	0
4:45 - 4:59	2	0	2
Hour Total	2	0	2
5:00 - 5:14	0	0	0
5:15 - 5:29	0	0	0
5:30 - 5:44	0	0	0
5:45 - 5:59	0	0	0
Hour Total	0	0	0
6:00 - 6:14	0	0	0
6:15 - 6:29	0	0	0
6:30 - 6:44	0	0	0
6:45 - 6:59	0	0	0
Hour Total	0	0	0
7:00 - 7:14	0	0	0
7:15 - 7:29	0	0	0
7:30 - 7:44	0	1	1
7:45 - 7:59	0	0	0
Hour Total	0	1	1

Location: EAGLE MOUNTAIN RD. BETWEEN I-10 RAMPS
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
8:00 - 8:14	0	2	2
8:15 - 8:29	0	0	0
8:30 - 8:44	0	0	0
8:45 - 8:59	0	1	1
Hour Total	0	3	3
9:00 - 9:14	0	0	0
9:15 - 9:29	0	2	2
9:30 - 9:44	0	0	0
9:45 - 9:59	0	0	0
Hour Total	0	2	2
10:00 - 10:14	0	0	0
10:15 - 10:29	~~0~~	~~1~~	1
10:30 - 10:44	~~0~~	~~0~~	0
10:45 - 10:59	~~0~~	~~5~~	5
Hour Total	0	6	6
11:00 - 11:14	~~1~~	~~2~~	3
11:15 - 11:29	0	0	0
11:30 - 11:44	0	0	0
11:45 - 11:59	0	1	1
Hour Total	1	3	4
12:00 - 12:14	0	0	0
12:15 - 12:29	0	0	0
12:30 - 12:44	0	1	1
12:45 - 12:59	0	0	0
Hour Total	0	1	1
13:00 - 13:14	0	0	0
13:15 - 13:29	0	0	0
13:30 - 13:44	0	0	0
13:45 - 13:59	1	0	1
Hour Total	1	0	1
14:00 - 14:14	0	0	0
14:15 - 14:29	0	1	1
14:30 - 14:44	0	2	2
14:45 - 14:59	0	1	1
Hour Total	0	4	4
15:00 - 15:14	0	2	2
15:15 - 15:29	2	1	3
15:30 - 15:44	0	0	0
15:45 - 15:59	0	1	1
Hour Total	2	4	6
16:00 - 16:14	0	0	0
16:15 - 16:29	0	2	2
16:30 - 16:44	0	1	1
16:45 - 16:59	0	0	0
Hour Total	0	3	3

Location: EAGLE MOUNTAIN RD. BETWEEN I-10 RAMPS
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
17:00 - 17:14	0	2	2
17:15 - 17:29	0	0	0
17:30 - 17:44	0	0	0
17:45 - 17:59	0	0	0
Hour Total	0	2	2
18:00 - 18:14	0	2	2
18:15 - 18:29	0	0	0
18:30 - 18:44	0	3	3
18:45 - 18:59	0	2	2
Hour Total	0	7	7
19:00 - 19:14	0	0	0
19:15 - 19:29	0	0	0
19:30 - 19:44	0	0	0
19:45 - 19:59	0	1	1
Hour Total	0	1	1
20:00 - 20:14	1	2	3
20:15 - 20:29	0	0	0
20:30 - 20:44	0	0	0
20:45 - 20:59	0	0	0
Hour Total	1	2	3
21:00 - 21:14	0	0	0
21:15 - 21:29	0	0	0
21:30 - 21:44	0	0	0
21:45 - 21:59	0	0	0
Hour Total	0	0	0
22:00 - 22:14	0	1	1
22:15 - 22:29	0	0	0
22:30 - 22:44	0	0	0
23:45 - 22:59	0	1	1
Hour Total	0	2	2
23:00 - 23:14	0	2	2
23:15 - 23:29	0	0	0
23:30 - 23:44	0	2	2
23:45 - 23:59	0	1	1
Hour Total	0	5	5

ADT :	7	56	63
Factored ADT :	7	56	63
AM Peak Time :	4:00- 5:00	10:15-11:15	10:15-11:15
AM Peak Volume:	2	8	9
PM Peak Time :	14:30-15:30	18:00-19:00	14:30-15:30
PM Peak Volume:	2	7	8

WEST COAST TRAFFIC COUNTERS

Location: EAGLE MOUNTAIN RD. BETWEEN RAGSDALE RD.& I-10 W/B
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	NorthBound Volume	SouthBound Volume	Total Volume
Mid - 12:59	1	0	1
1:00 - 1:59	0	5	5
2:00 - 2:59	0	7	7
3:00 - 3:59	0	5	5
4:00 - 4:59	0	0	0
5:00 - 5:59	0	1	1
6:00 - 6:59	3	9	12
7:00 - 7:59	3	1	4
8:00 - 8:59	4	3	7
9:00 - 9:59	2	2	4
10:00 - 10:59	6	1	7
11:00 - 11:59	3	1	4
12:00 - 12:59	3	3	6
13:00 - 13:59	0	1	1
14:00 - 14:59	5	1	6
15:00 - 15:59	3	2	5
16:00 - 16:59	3	4	7
17:00 - 17:59	4	2	6
18:00 - 18:59	7	0	7
19:00 - 19:59	1	0	1
20:00 - 20:59	1	0	1
21:00 - 21:59	0	0	0
22:00 - 22:59	2	1	3
23:00 - 23:59	5	5	10
ADT :	56	54	110
Factored ADT :	56	54	110
AM Peak Time :	10:15-11:15	1:15- 2:15	5:45- 6:45
AM Peak Volume:	7	12	13
PM Peak Time :	14:15-15:15	22:15-23:15	22:45-23:45
PM Peak Volume:	7	6	11

WEST COAST TRAFFIC COUNTERS

Location: EAGLE MOUNTAIN RD. BETWEEN RAGSDALE RD.& I-10 W/B
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	NorthBound Volume	SouthBound Volume	Total Volume
Mid - 12:14	0	0	0
12:15 - 12:29	1	0	1
12:30 - 12:44	0	0	0
12:45 - 12:59	0	0	0
Hour Total	1	0	1
1:00 - 1:14	0	0	0
1:15 - 1:29	0	3	3
1:30 - 1:44	0	0	0
1:45 - 1:59	0	2	2
Hour Total	0	5	5
2:00 - 2:14	0	7	7
2:15 - 2:29	0	0	0
2:30 - 2:44	0	0	0
2:45 - 2:59	0	0	0
Hour Total	0	7	7
3:00 - 3:14	0	4	4
3:15 - 3:29	0	0	0
3:30 - 3:44	0	1	1
3:45 - 3:59	0	0	0
Hour Total	0	5	5
4:00 - 4:14	0	0	0
4:15 - 4:29	0	0	0
4:30 - 4:44	0	0	0
4:45 - 4:59	0	0	0
Hour Total	0	0	0
5:00 - 5:14	0	0	0
5:15 - 5:29	0	0	0
5:30 - 5:44	0	0	0
5:45 - 5:59	0	1	1
Hour Total	0	1	1
6:00 - 6:14	2	0	2
6:15 - 6:29	1	7	8
6:30 - 6:44	0	2	2
6:45 - 6:59	0	0	0
Hour Total	3	9	12
7:00 - 7:14	0	0	0
7:15 - 7:29	2	0	2
7:30 - 7:44	1	1	2
7:45 - 7:59	0	0	0
Hour Total	3	1	4

Location: EAGLE MOUNTAIN RD. BETWEEN RAGSDALE RD.& I-10 W/B
Count Date: Wednesday - November 29, 1989

Time	NorthBound Volume	SouthBound Volume	Total Volume
8:00 - 8:14	2	0	2
8:15 - 8:29	1	0	1
8:30 - 8:44	0	2	2
8:45 - 8:59	1	1	2
Hour Total	4	3	7
9:00 - 9:14	0	1	1
9:15 - 9:29	2	1	3
9:30 - 9:44	0	0	0
9:45 - 9:59	0	0	0
Hour Total	2	2	4
10:00 - 10:14	0	1	1
10:15 - 10:29	0	0	0
10:30 - 10:44	1	0	1
10:45 - 10:59	5	0	5
Hour Total	6	1	7
11:00 - 11:14	1	0	1
11:15 - 11:29	0	1	1
11:30 - 11:44	0	0	0
11:45 - 11:59	2	0	2
Hour Total	3	1	4
12:00 - 12:14	0	1	1
12:15 - 12:29	1	0	1
12:30 - 12:44	2	1	3
12:45 - 12:59	0	1	1
Hour Total	3	3	6
13:00 - 13:14	0	0	0
13:15 - 13:29	0	0	0
13:30 - 13:44	0	1	1
13:45 - 13:59	0	0	0
Hour Total	0	1	1
14:00 - 14:14	0	0	0
14:15 - 14:29	1	0	1
14:30 - 14:44	2	1	3
14:45 - 14:59	2	0	2
Hour Total	5	1	6
15:00 - 15:14	2	0	2
15:15 - 15:29	1	2	3
15:30 - 15:44	0	0	0
15:45 - 15:59	0	0	0
Hour Total	3	2	5
16:00 - 16:14	1	1	2
16:15 - 16:29	1	1	2
16:30 - 16:44	1	1	2
16:45 - 16:59	0	1	1
Hour Total	3	4	7

Location: EAGLE MOUNTAIN RD. BETWEEN RAGSDALE RD.& I-10 W/B
Count Date: Wednesday - November 29, 1989

Time	NorthBound Volume	SouthBound Volume	Total Volume
17:00 - 17:14	2	2	4
17:15 - 17:29	0	0	0
17:30 - 17:44	2	0	2
17:45 - 17:59	0	0	0
Hour Total	4	2	6
18:00 - 18:14	2	0	2
18:15 - 18:29	0	0	0
18:30 - 18:44	3	0	3
18:45 - 18:59	2	0	2
Hour Total	7	0	7
19:00 - 19:14	0	0	0
19:15 - 19:29	0	0	0
19:30 - 19:44	0	0	0
19:45 - 19:59	1	0	1
Hour Total	1	0	1
20:00 - 20:14	1	0	1
20:15 - 20:29	0	0	0
20:30 - 20:44	0	0	0
20:45 - 20:59	0	0	0
Hour Total	1	0	1
21:00 - 21:14	0	0	0
21:15 - 21:29	0	0	0
21:30 - 21:44	0	0	0
21:45 - 21:59	0	0	0
Hour Total	0	0	0
22:00 - 22:14	1	0	1
22:15 - 22:29	0	0	0
22:30 - 22:44	0	0	0
23:45 - 22:59	1	1	2
Hour Total	2	1	3
23:00 - 23:14	2	5	7
23:15 - 23:29	0	0	0
23:30 - 23:44	2	0	2
23:45 - 23:59	1	0	1
Hour Total	5	5	10

ADT :	56	54	110
Factored ADT :	56	54	110
AM Peak Time :	10:15-11:15	1:15- 2:15	5:45- 6:45
AM Peak Volume:	7	12	13
PM Peak Time :	14:15-15:15	22:15-23:15	22:45-23:45
PM Peak Volume:	7	6	11

WEST COAST TRAFFIC COUNTERS

Location: EAGLE MOUNTAIN RD. N/O RAGSDALE RD.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	NorthBound Volume	SouthBound Volume	Total Volume
Mid - 12:59	1	0	1
1:00 - 1:59	0	0	0
2:00 - 2:59	0	0	0
3:00 - 3:59	0	0	0
4:00 - 4:59	0	0	0
5:00 - 5:59	0	1	1
6:00 - 6:59	0	11	11
7:00 - 7:59	4	3	7
8:00 - 8:59	3	4	7
9:00 - 9:59	1	2	3
10:00 - 10:59	5	2	7
11:00 - 11:59	0	1	1
12:00 - 12:59	2	3	5
13:00 - 13:59	0	0	0
14:00 - 14:59	1	4	5
15:00 - 15:59	2	0	2
16:00 - 16:59	2	0	2
17:00 - 17:59	2	2	4
18:00 - 18:59	0	4	4
19:00 - 19:59	1	0	1
20:00 - 20:59	1	0	1
21:00 - 21:59	0	0	0
22:00 - 22:59	1	1	2
23:00 - 23:59	1	0	1
ADT :	27	38	65
Factored ADT :	27	38	65
AM Peak Time :	7:30- 8:30	5:45- 6:45	5:45- 6:45
AM Peak Volume:	6	12	12
PM Peak Time :	14:15-15:15	17:30-18:30	17:30-18:30
PM Peak Volume:	3	6	8

WEST COAST TRAFFIC COUNTERS

Location: EAGLE MOUNTAIN RD. N/O RAGSDALE RD.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	NorthBound Volume	SouthBound Volume	Total Volume
Mid - 12:14	0	0	0
12:15 - 12:29	1	0	1
12:30 - 12:44	0	0	0
12:45 - 12:59	0	0	0
Hour Total	1	0	1
1:00 - 1:14	0	0	0
1:15 - 1:29	0	0	0
1:30 - 1:44	0	0	0
1:45 - 1:59	0	0	0
Hour Total	0	0	0
2:00 - 2:14	0	0	0
2:15 - 2:29	0	0	0
2:30 - 2:44	0	0	0
2:45 - 2:59	0	0	0
Hour Total	0	0	0
3:00 - 3:14	0	0	0
3:15 - 3:29	0	0	0
3:30 - 3:44	0	0	0
3:45 - 3:59	0	0	0
Hour Total	0	0	0
4:00 - 4:14	0	0	0
4:15 - 4:29	0	0	0
4:30 - 4:44	0	0	0
4:45 - 4:59	0	0	0
Hour Total	0	0	0
5:00 - 5:14	0	0	0
5:15 - 5:29	0	0	0
5:30 - 5:44	0	0	0
5:45 - 5:59	0	1	1
Hour Total	0	1	1
6:00 - 6:14	0	2	2
6:15 - 6:29	0	7	7
6:30 - 6:44	0	2	2
6:45 - 6:59	0	0	0
Hour Total	0	11	11
7:00 - 7:14	0	0	0
7:15 - 7:29	0	2	2
7:30 - 7:44	0	0	0
7:45 - 7:59	4	1	5
Hour Total	4	3	7

Location: EAGLE MOUNTAIN RD. N/O RAGSDALE RD.
Count Date: Wednesday - November 29, 1989

Time	NorthBound Volume	SouthBound Volume	Total Volume
8:00 - 8:14	1	1	2
8:15 - 8:29	1	0	1
8:30 - 8:44	0	2	2
8:45 - 8:59	1	1	2
Hour Total	3	4	7
9:00 - 9:14	0	0	0
9:15 - 9:29	1	1	2
9:30 - 9:44	0	1	1
9:45 - 9:59	0	0	0
Hour Total	1	2	3
10:00 - 10:14	0	1	1
10:15 - 10:29	0	0	0
10:30 - 10:44	0	1	1
10:45 - 10:59	5	0	5
Hour Total	5	2	7
11:00 - 11:14	0	0	0
11:15 - 11:29	0	0	0
11:30 - 11:44	0	0	0
11:45 - 11:59	0	1	1
Hour Total	0	1	1
12:00 - 12:14	0	1	1
12:15 - 12:29	0	1	1
12:30 - 12:44	2	1	3
12:45 - 12:59	0	0	0
Hour Total	2	3	5
13:00 - 13:14	0	0	0
13:15 - 13:29	0	0	0
13:30 - 13:44	0	0	0
13:45 - 13:59	0	0	0
Hour Total	0	0	0
14:00 - 14:14	0	0	0
14:15 - 14:29	1	3	4
14:30 - 14:44	0	0	0
14:45 - 14:59	0	1	1
Hour Total	1	4	5
15:00 - 15:14	2	0	2
15:15 - 15:29	0	0	0
15:30 - 15:44	0	0	0
15:45 - 15:59	0	0	0
Hour Total	2	0	2
16:00 - 16:14	0	0	0
16:15 - 16:29	1	0	1
16:30 - 16:44	1	0	1
16:45 - 16:59	0	0	0
Hour Total	2	0	2

Location: EAGLE MOUNTAIN RD. N/O RAGSDALE RD.
Count Date: Wednesday - November 29, 1989

Time	NorthBound Volume	SouthBound Volume	Total Volume
17:00 - 17:14	0	0	0
17:15 - 17:29	0	0	0
17:30 - 17:44	2	2	4
17:45 - 17:59	0	0	0
Hour Total	2	2	4
18:00 - 18:14	0	0	0
18:15 - 18:29	0	4	4
18:30 - 18:44	0	0	0
18:45 - 18:59	0	0	0
Hour Total	0	4	4
19:00 - 19:14	0	0	0
19:15 - 19:29	1	0	1
19:30 - 19:44	0	0	0
19:45 - 19:59	0	0	0
Hour Total	1	0	1
20:00 - 20:14	1	0	1
20:15 - 20:29	0	0	0
20:30 - 20:44	0	0	0
20:45 - 20:59	0	0	0
Hour Total	1	0	1
21:00 - 21:14	0	0	0
21:15 - 21:29	0	0	0
21:30 - 21:44	0	0	0
21:45 - 21:59	0	0	0
Hour Total	0	0	0
22:00 - 22:14	1	0	1
22:15 - 22:29	0	0	0
22:30 - 22:44	0	0	0
23:45 - 22:59	0	1	1
Hour Total	1	1	2
23:00 - 23:14	0	0	0
23:15 - 23:29	0	0	0
23:30 - 23:44	0	0	0
23:45 - 23:59	1	0	1
Hour Total	1	0	1

ADT :	27	38	65
Factored ADT :	27	38	65
AM Peak Time :	7:30- 8:30	5:45- 6:45	5:45- 6:45
AM Peak Volume:	6	12	12
PM Peak Time :	14:15-15:15	17:30-18:30	17:30-18:30
PM Peak Volume:	3	6	8

WEST COAST TRAFFIC COUNTERS

Location: DESERT CENTER RICE RD. BETWEEN RAGSDALE RD.& I-10
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
Mid - 12:59	76	86	162 <
1:00 - 1:59	78	63	141
2:00 - 2:59	52	69	121
3:00 - 3:59	51	41	92
4:00 - 4:59	33	24	57
5:00 - 5:59	54	23	77
6:00 - 6:59	53	54	107
7:00 - 7:59	78	51	129
8:00 - 8:59	64	68	132
9:00 - 9:59	68	65	133
10:00 - 10:59	70	78	148
11:00 - 11:59	62	62	124
12:00 - 12:59	70	72	142
13:00 - 13:59	70	82	152
14:00 - 14:59	72	85	157
15:00 - 15:59	67	74	141
16:00 - 16:59	72	91	163
17:00 - 17:59	56	102	158
18:00 - 18:59	75	72	147
19:00 - 19:59	45	46	91
20:00 - 20:59	38	62	100
21:00 - 21:59	52	41	93
22:00 - 22:59	40	115	155
23:00 - 23:59	58	75	133
ADT :	1454	1601	3055
Factored ADT :	1454	1601	3055
AM Peak Time :	7:30- 8:30	0:15- 1:15	0:00- 1:00
AM Peak Volume:	79	92	162
PM Peak Time :	13:45-14:45	22:00-23:00	13:30-14:30
PM Peak Volume:	87	115	175

WEST COAST TRAFFIC COUNTERS

Location: DESERT CENTER RICE RD. BETWEEN RAGSDALE RD.& I-10
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
Mid - 12:14	30	16	46
12:15 - 12:29	19	25	44
12:30 - 12:44	7	22	29
12:45 - 12:59	20	23	43
Hour Total	76	86	162
1:00 - 1:14	19	22	41
1:15 - 1:29	17	16	33
1:30 - 1:44	22	14	36
1:45 - 1:59	20	11	31
Hour Total	78	63	141
2:00 - 2:14	11	7	18
2:15 - 2:29	11	28	39
2:30 - 2:44	11	16	27
2:45 - 2:59	19	18	37
Hour Total	52	69	121
3:00 - 3:14	21	9	30
3:15 - 3:29	11	13	24
3:30 - 3:44	11	15	26
3:45 - 3:59	8	4	12
Hour Total	51	41	92
4:00 - 4:14	7	7	14
4:15 - 4:29	16	7	23
4:30 - 4:44	9	6	15
4:45 - 4:59	1	4	5
Hour Total	33	24	57
5:00 - 5:14	13	2	15
5:15 - 5:29	9	4	13
5:30 - 5:44	8	10	18
5:45 - 5:59	24	7	31
Hour Total	54	23	77
6:00 - 6:14	21	12	33
6:15 - 6:29	12	20	32
6:30 - 6:44	8	13	21
6:45 - 6:59	12	9	21
Hour Total	53	54	107
7:00 - 7:14	19	8	27
7:15 - 7:29	15	8	23
7:30 - 7:44	19	15	34
7:45 - 7:59	25	20	45
Hour Total	78	51	129

Location: DESERT CENTER RICE RD. BETWEEN RAGSDALE RD.& I-10
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
8:00 - 8:14	14	11	25
8:15 - 8:29	21	26	47
8:30 - 8:44	14	13	27
8:45 - 8:59	15	18	33
Hour Total	64	68	132
9:00 - 9:14	12	13	25
9:15 - 9:29	16	14	30
9:30 - 9:44	19	17	36
9:45 - 9:59	21	21	42
Hour Total	68	65	133
10:00 - 10:14	21	21	42
10:15 - 10:29	18	14	32
10:30 - 10:44	11	25	36
10:45 - 10:59	20	18	38
Hour Total	70	78	148
11:00 - 11:14	19	22	41
11:15 - 11:29	21	16	37
11:30 - 11:44	9	15	24
11:45 - 11:59	13	9	22
Hour Total	62	62	124
12:00 - 12:14	13	14	27
12:15 - 12:29	10	32	42
12:30 - 12:44	28	14	42
12:45 - 12:59	19	12	31
Hour Total	70	72	142
13:00 - 13:14	18	16	34
13:15 - 13:29	16	14	30
13:30 - 13:44	14	26	40
13:45 - 13:59	22	26	48
Hour Total	70	82	152
14:00 - 14:14	14	21	35
14:15 - 14:29	27	25	52
14:30 - 14:44	24	16	40
14:45 - 14:59	7	23	30
Hour Total	72	85	157
15:00 - 15:14	23	24	47
15:15 - 15:29	15	9	24
15:30 - 15:44	17	22	39
15:45 - 15:59	12	19	31
Hour Total	67	74	141
16:00 - 16:14	12	22	34
16:15 - 16:29	21	23	44
16:30 - 16:44	22	21	43
16:45 - 16:59	17	25	42
Hour Total	72	91	163

Location: DESERT CENTER RICE RD. BETWEEN RAGSDALE RD.& I-10
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
17:00 - 17:14	12	21	33
17:15 - 17:29	15	16	31
17:30 - 17:44	14	23	37
17:45 - 17:59	15	42	57
Hour Total	56	102	158
18:00 - 18:14	21	18	39
18:15 - 18:29	17	18	35
18:30 - 18:44	17	21	38
18:45 - 18:59	20	15	35
Hour Total	75	72	147
19:00 - 19:14	20	13	33
19:15 - 19:29	2	12	14
19:30 - 19:44	17	7	24
19:45 - 19:59	6	14	20
Hour Total	45	46	91
20:00 - 20:14	12	16	28
20:15 - 20:29	10	13	23
20:30 - 20:44	11	15	26
20:45 - 20:59	5	18	23
Hour Total	38	62	100
21:00 - 21:14	16	16	32
21:15 - 21:29	17	11	28
21:30 - 21:44	11	10	21
21:45 - 21:59	8	4	12
Hour Total	52	41	93
22:00 - 22:14	6	21	27
22:15 - 22:29	6	24	30
22:30 - 22:44	13	38	51
23:45 - 22:59	15	32	47
Hour Total	40	115	155
23:00 - 23:14	13	17	30
23:15 - 23:29	13	22	35
23:30 - 23:44	17	19	36
23:45 - 23:59	15	17	32
Hour Total	58	75	133
ADT :	1454	1601	3055
Factored ADT :	1454	1601	3055
AM Peak Time :	7:30- 8:30	0:15- 1:15	0:00- 1:00
AM Peak Volume:	79	92	162
PM Peak Time :	13:45-14:45	22:00-23:00	13:30-14:30
PM Peak Volume:	87	115	175

WEST COAST TRAFFIC COUNTERS

Location: KAISER RD. N/O DESERT RICE RD.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
Mid - 12:59	0	0	0
1:00 - 1:59	1	0	1
2:00 - 2:59	0	0	0
3:00 - 3:59	1	0	1
4:00 - 4:59	1	2	3
5:00 - 5:59	9	8	17
6:00 - 6:59	9	23	32
7:00 - 7:59	10	12	22
8:00 - 8:59	24	23	47
9:00 - 9:59	23	22	45
10:00 - 10:59	14	19	33
11:00 - 11:59	21	18	39
12:00 - 12:59	20	22	42
13:00 - 13:59	22	29	51
14:00 - 14:59	16	24	40
15:00 - 15:59	14	16	30
16:00 - 16:59	18	27	45
17:00 - 17:59	13	24	37
18:00 - 18:59	6	12	18
19:00 - 19:59	12	19	31
20:00 - 20:59	4	9	13
21:00 - 21:59	4	9	13
22:00 - 22:59	1	3	4
23:00 - 23:59	2	2	4
ADT :	245	323	568
Factored ADT :	245	323	568
AM Peak Time :	11:15-12:15	11:15-12:15	11:15-12:15
AM Peak Volume:	30	25	55
PM Peak Time :	12:00-13:00	16:15-17:15	16:15-17:15
PM Peak Volume:	25	32	54

WEST COAST TRAFFIC COUNTERS

Location: KAISER RD. N/O DESERT RICE RD.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
Mid - 12:14	0	0	0
12:15 - 12:29	0	0	0
12:30 - 12:44	0	0	0
12:45 - 12:59	0	0	0
Hour Total	0	0	0
1:00 - 1:14	0	0	0
1:15 - 1:29	0	0	0
1:30 - 1:44	1	0	1
1:45 - 1:59	0	0	0
Hour Total	1	0	1
2:00 - 2:14	0	0	0
2:15 - 2:29	0	0	0
2:30 - 2:44	0	0	0
2:45 - 2:59	0	0	0
Hour Total	0	0	0
3:00 - 3:14	0	0	0
3:15 - 3:29	1	0	1
3:30 - 3:44	0	0	0
3:45 - 3:59	0	0	0
Hour Total	1	0	1
4:00 - 4:14	0	0	0
4:15 - 4:29	1	1	2
4:30 - 4:44	0	0	0
4:45 - 4:59	0	1	1
Hour Total	1	2	3
5:00 - 5:14	1	2	3
5:15 - 5:29	2	0	2
5:30 - 5:44	3	1	4
5:45 - 5:59	3	5	8
Hour Total	9	8	17
6:00 - 6:14	4	5	9
6:15 - 6:29	3	5	8
6:30 - 6:44	1	3	4
6:45 - 6:59	1	10	11
Hour Total	9	23	32
7:00 - 7:14	2	3	5
7:15 - 7:29	1	5	6
7:30 - 7:44	6	1	7
7:45 - 7:59	1	3	4
Hour Total	10	12	22

Location: KAISER RD. N/O DESERT RICE RD.
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
8:00 - 8:14	5	3	8
8:15 - 8:29	6	12	18
8:30 - 8:44	5	3	8
8:45 - 8:59	8	5	13
Hour Total	24	23	47
9:00 - 9:14	4	1	5
9:15 - 9:29	6	9	15
9:30 - 9:44	4	4	8
9:45 - 9:59	9	8	17
Hour Total	23	22	45
10:00 - 10:14	4	2	6
10:15 - 10:29	3	4	7
10:30 - 10:44	3	9	12
10:45 - 10:59	4	4	8
Hour Total	14	19	33
11:00 - 11:14	2	2	4
11:15 - 11:29	7	4	11
11:30 - 11:44	7	5	12
11:45 - 11:59	5	7	12
Hour Total	21	18	39
12:00 - 12:14	11	9	20
12:15 - 12:29	2	6	8
12:30 - 12:44	7	6	13
12:45 - 12:59	0	1	1
Hour Total	20	22	42
13:00 - 13:14	6	9	15
13:15 - 13:29	5	5	10
13:30 - 13:44	4	10	14
13:45 - 13:59	7	5	12
Hour Total	22	29	51
14:00 - 14:14	7	5	12
14:15 - 14:29	3	8	11
14:30 - 14:44	2	7	9
14:45 - 14:59	4	4	8
Hour Total	16	24	40
15:00 - 15:14	5	4	9
15:15 - 15:29	4	3	7
15:30 - 15:44	2	2	4
15:45 - 15:59	3	7	10
Hour Total	14	16	30
16:00 - 16:14	2	4	6
16:15 - 16:29	5	7	12
16:30 - 16:44	7	5	12
16:45 - 16:59	4	11	15
Hour Total	18	27	45

Location: KAISER RD. N/O DESERT RICE RD.
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
17:00 - 17:14	6	9	15
17:15 - 17:29	2	3	5
17:30 - 17:44	4	6	10
17:45 - 17:59	1	6	7
Hour Total	13	24	37
18:00 - 18:14	1	1	2
18:15 - 18:29	3	3	6
18:30 - 18:44	1	6	7
18:45 - 18:59	1	2	3
Hour Total	6	12	18
19:00 - 19:14	7	6	13
19:15 - 19:29	3	7	10
19:30 - 19:44	1	3	4
19:45 - 19:59	1	3	4
Hour Total	12	19	31
20:00 - 20:14	1	1	2
20:15 - 20:29	0	4	4
20:30 - 20:44	3	4	7
20:45 - 20:59	0	0	0
Hour Total	4	9	13
21:00 - 21:14	1	3	4
21:15 - 21:29	2	2	4
21:30 - 21:44	1	0	1
21:45 - 21:59	0	4	4
Hour Total	4	9	13
22:00 - 22:14	0	1	1
22:15 - 22:29	1	1	2
22:30 - 22:44	0	0	0
23:45 - 22:59	0	1	1
Hour Total	1	3	4
23:00 - 23:14	0	0	0
23:15 - 23:29	0	1	1
23:30 - 23:44	1	1	2
23:45 - 23:59	1	0	1
Hour Total	2	2	4

ADT :	245	323	568
Factored ADT :	245	323	568
AM Peak Time :	11:15-12:15	11:15-12:15	11:15-12:15
AM Peak Volume:	30	25	55
PM Peak Time :	12:00-13:00	16:15-17:15	16:15-17:15
PM Peak Volume:	25	32	54

WEST COAST TRAFFIC COUNTERS

Location: KAISER RD. N/O LAKE TAMARISK DR.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
Mid - 12:59	0	0	0
1:00 - 1:59	1	0	1
2:00 - 2:59	0	0	0
3:00 - 3:59	3	2	5
4:00 - 4:59	0	3	3
5:00 - 5:59	6	7	13
6:00 - 6:59	6	24	30
7:00 - 7:59	6	13	19
8:00 - 8:59	14	13	27
9:00 - 9:59	14	7	21
10:00 - 10:59	11	15	26
11:00 - 11:59	12	6	18
12:00 - 12:59	11	9	20
13:00 - 13:59	19	13	32
14:00 - 14:59	10	11	21
15:00 - 15:59	13	10	23
16:00 - 16:59	26	21	47
17:00 - 17:59	17	10	27
18:00 - 18:59	7	10	17
19:00 - 19:59	8	8	16
20:00 - 20:59	2	4	6
21:00 - 21:59	8	7	15
22:00 - 22:59	1	4	5
23:00 - 23:59	1	2	3
ADT :	196	199	395
Factored ADT :	196	199	395
AM Peak Time :	9:30-10:30	6:00- 7:00	6:15- 7:15
AM Peak Volume:	16	24	31
PM Peak Time :	16:15-17:15	16:00-17:00	16:15-17:15
PM Peak Volume:	29	21	49

WEST COAST TRAFFIC COUNTERS

Location: KAISER RD. N/O LAKE TAMARISK DR.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
Mid - 12:14	0	0	0
12:15 - 12:29	0	0	0
12:30 - 12:44	0	0	0
12:45 - 12:59	0	0	0
Hour Total	0	0	0
1:00 - 1:14	0	0	0
1:15 - 1:29	0	0	0
1:30 - 1:44	1	0	1
1:45 - 1:59	0	0	0
Hour Total	1	0	1
2:00 - 2:14	0	0	0
2:15 - 2:29	0	0	0
2:30 - 2:44	0	0	0
2:45 - 2:59	0	0	0
Hour Total	0	0	0
3:00 - 3:14	0	0	0
3:15 - 3:29	3	1	4
3:30 - 3:44	0	1	1
3:45 - 3:59	0	0	0
Hour Total	3	2	5
4:00 - 4:14	0	0	0
4:15 - 4:29	0	1	1
4:30 - 4:44	0	0	0
4:45 - 4:59	0	2	2
Hour Total	0	3	3
5:00 - 5:14	0	0	0
5:15 - 5:29	2	1	3
5:30 - 5:44	0	1	1
5:45 - 5:59	4	5	9
Hour Total	6	7	13
6:00 - 6:14	1	2	3
6:15 - 6:29	0	5	5
6:30 - 6:44	3	9	12
6:45 - 6:59	2	8	10
Hour Total	6	24	30
7:00 - 7:14	3	1	4
7:15 - 7:29	0	5	5
7:30 - 7:44	2	4	6
7:45 - 7:59	1	3	4
Hour Total	6	13	19

Location: KAISER RD. N/O LAKE TAMARISK DR.
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
8:00 - 8:14	3	0	3
8:15 - 8:29	2	9	11
8:30 - 8:44	3	3	6
8:45 - 8:59	6	1	7
Hour Total	14	13	27
9:00 - 9:14	1	0	1
9:15 - 9:29	1	2	3
9:30 - 9:44	7	3	10
9:45 - 9:59	5	2	7
Hour Total	14	7	21
10:00 - 10:14	1	1	2
10:15 - 10:29	3	4	7
10:30 - 10:44	3	6	9
10:45 - 10:59	4	4	8
Hour Total	11	15	26
11:00 - 11:14	2	1	3
11:15 - 11:29	5	1	6
11:30 - 11:44	2	2	4
11:45 - 11:59	3	2	5
Hour Total	12	6	18
12:00 - 12:14	1	2	3
12:15 - 12:29	1	2	3
12:30 - 12:44	9	1	10
12:45 - 12:59	0	4	4
Hour Total	11	9	20
13:00 - 13:14	3	4	7
13:15 - 13:29	4	5	9
13:30 - 13:44	5	3	8
13:45 - 13:59	7	1	8
Hour Total	19	13	32
14:00 - 14:14	5	2	7
14:15 - 14:29	2	3	5
14:30 - 14:44	1	3	4
14:45 - 14:59	2	3	5
Hour Total	10	11	21
15:00 - 15:14	3	3	6
15:15 - 15:29	3	2	5
15:30 - 15:44	5	3	8
15:45 - 15:59	2	2	4
Hour Total	13	10	23
16:00 - 16:14	5	5	10
16:15 - 16:29	8	4	12
16:30 - 16:44	5	5	10
16:45 - 16:59	8	7	15
Hour Total	26	21	47

Location: KAISER RD. N/O LAKE TAMARISK DR.
Count Date: Wednesday - November 29, 1989

Time	SouthBound Volume	NorthBound Volume	Total Volume
17:00 - 17:14	8	4	12
17:15 - 17:29	6	1	7
17:30 - 17:44	2	2	4
17:45 - 17:59	1	3	4
Hour Total	17	10	27
18:00 - 18:14	2	2	4
18:15 - 18:29	2	3	5
18:30 - 18:44	2	3	5
18:45 - 18:59	1	2	3
Hour Total	7	10	17
19:00 - 19:14	3	1	4
19:15 - 19:29	3	4	7
19:30 - 19:44	1	0	1
19:45 - 19:59	1	3	4
Hour Total	8	8	16
20:00 - 20:14	1	1	2
20:15 - 20:29	0	2	2
20:30 - 20:44	1	1	2
20:45 - 20:59	0	0	0
Hour Total	2	4	6
21:00 - 21:14	5	3	8
21:15 - 21:29	1	0	1
21:30 - 21:44	2	1	3
21:45 - 21:59	0	3	3
Hour Total	8	7	15
22:00 - 22:14	1	1	2
22:15 - 22:29	0	1	1
22:30 - 22:44	0	1	1
23:45 - 22:59	0	1	1
Hour Total	1	4	5
23:00 - 23:14	0	0	0
23:15 - 23:29	1	1	2
23:30 - 23:44	0	1	1
23:45 - 23:59	0	0	0
Hour Total	1	2	3
ADT :	196	199	395
Factored ADT :	196	199	395
AM Peak Time :	9:30-10:30	6:00- 7:00	6:15- 7:15
AM Peak Volume:	16	24	31
PM Peak Time :	16:15-17:15	16:00-17:00	16:15-17:15
PM Peak Volume:	29	21	49

WEST COAST TRAFFIC COUNTERS

Location: DESERT CANYON RICE RD.BETWEEN W/B I-10 RAMPS 7 RAGSDALE RD.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
Mid - 0:59	0	14	2	0	0	0	0	0	8	2	8	4	0	37
1:00 - 1:59	0	6	4	0	0	0	0	0	8	0	10	1	0	29
2:00 - 2:59	0	4	1	0	0	0	0	0	6	0	9	4	0	24
3:00 - 3:59	0	6	0	0	0	0	0	0	6	0	3	2	0	17
4:00 - 4:59	0	8	0	0	0	0	0	0	2	0	1	0	0	11
5:00 - 5:59	0	14	0	0	0	0	0	0	3	0	0	0	0	17
6:00 - 6:59	0	15	4	0	1	0	0	0	9	0	0	1	0	29
7:00 - 7:59	0	22	7	0	0	0	0	0	6	0	0	0	0	35
8:00 - 8:59	0	26	4	0	1	1	0	0	7	1	3	0	0	43
9:00 - 9:59	0	31	8	0	2	0	0	0	6	0	0	0	1	48
10:00 - 10:59	1	51	5	0	0	0	0	0	4	0	2	0	0	59
11:00 - 11:59	0	41	5	0	0	1	0	0	4	0	0	0	0	48
Noon - 12:59	0	34	5	0	2	1	0	0	3	0	5	0	1	50
13:00 - 13:59	0	36	3	1	0	0	0	0	6	0	3	0	0	46
14:00 - 14:59	0	49	3	0	0	0	0	0	6	0	0	2	1	59
15:00 - 15:59	0	44	6	1	1	0	0	0	3	0	2	0	1	57
16:00 - 16:59	0	46	13	1	0	0	0	0	8	0	1	0	0	65
17:00 - 17:59	0	38	5	0	2	0	0	0	12	0	2	2	1	60
18:00 - 18:59	1	27	3	0	0	1	0	0	9	0	4	0	0	44
19:00 - 19:59	0	18	2	0	0	0	0	0	4	0	2	0	0	24
20:00 - 20:59	0	21	0	0	0	0	0	0	5	0	7	0	0	32
21:00 - 21:59	0	17	3	0	0	0	0	0	5	0	2	0	0	27
22:00 - 22:59	0	14	7	0	0	0	0	0	20	0	5	3	0	48
23:00 - 23:59	0	28	2	0	0	0	0	0	11	0	4	1	0	42
Totals:	2	610	92	3	9	4	0	0	161	3	73	20	5	951
% of Totals:	0	64	10	0	1	0	0	0	17	0	8	2	1	100
% of AM:	0	25	4	0	0	0	0	0	7	0	4	1	0	42
% of PM:	0	39	5	0	1	0	0	0	10	0	4	1	0	58

Truck Summary:
Total Trucks (#3 thru #13): 370
% of Total Trucks: 39
% of AM Trucks: 18
% of PM Trucks: 21

Classification Legend:

Num	Definition	Num	Definiton	Num	Definiton
#1	Motocycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Car - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Truck, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Busses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

WEST COAST TRAFFIC COUNTERS

Location: DESERT CANYON RICE RD.BETWEEN W/B I-10 RAMPS 7 RAGSDALE RD.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
Mid - 12:14	0	3	0	0	0	0	0	0	2	0	1	0	0	0
12:15 - 12:29	0	4	1	0	0	0	0	0	2	0	0	4	0	0
12:30 - 12:44	0	5	1	0	0	0	0	0	1	1	3	0	0	0
12:45 - 12:59	0	2	0	0	0	0	0	0	3	1	4	0	0	0
Hour Total	0	14	2	0	0	0	0	0	8	2	8	4	0	37
1:00 - 1:14	0	1	1	0	0	0	0	0	4	0	4	0	0	0
1:15 - 1:29	0	2	1	0	0	0	0	0	3	0	2	0	0	0
1:30 - 1:44	0	1	2	0	0	0	0	0	1	0	1	1	0	0
1:45 - 1:59	0	2	0	0	0	0	0	0	0	0	3	0	0	0
Hour Total	0	6	4	0	0	0	0	0	8	0	10	1	0	29
2:00 - 2:14	0	0	0	0	0	0	0	0	0	0	2	0	0	0
2:15 - 2:29	0	2	0	0	0	0	0	0	4	0	4	0	0	0
2:30 - 2:44	0	0	0	0	0	0	0	0	1	0	3	2	0	0
2:45 - 2:59	0	2	1	0	0	0	0	0	1	0	0	2	0	0
Hour Total	0	4	1	0	0	0	0	0	6	0	9	4	0	24
3:00 - 3:14	0	3	0	0	0	0	0	0	2	0	1	0	0	0
3:15 - 3:29	0	2	0	0	0	0	0	0	2	0	1	0	0	0
3:30 - 3:44	0	1	0	0	0	0	0	0	0	0	1	2	0	0
3:45 - 3:59	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Hour Total	0	6	0	0	0	0	0	0	6	0	3	2	0	17
4:00 - 4:14	0	2	0	0	0	0	0	0	1	0	0	0	0	0
4:15 - 4:29	0	3	0	0	0	0	0	0	0	0	0	0	0	0
4:30 - 4:44	0	2	0	0	0	0	0	0	1	0	0	0	0	0
4:45 - 4:59	0	1	0	0	0	0	0	0	0	0	1	0	0	0
Hour Total	0	8	0	0	0	0	0	0	2	0	1	0	0	11
5:00 - 5:14	0	2	0	0	0	0	0	0	0	0	0	0	0	0
5:15 - 5:29	0	4	0	0	0	0	0	0	0	0	0	0	0	0
5:30 - 5:44	0	1	0	0	0	0	0	0	3	0	0	0	0	0
5:45 - 5:59	0	7	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	14	0	0	0	0	0	0	3	0	0	0	0	17
6:00 - 6:14	0	3	1	0	0	0	0	0	1	0	0	1	0	0
6:15 - 6:29	0	4	0	0	0	0	0	0	4	0	0	0	0	0
6:30 - 6:44	0	3	1	0	1	0	0	0	3	0	0	0	0	0
6:45 - 6:59	0	5	2	0	0	0	0	0	1	0	0	0	0	0
Hour Total	0	15	4	0	1	0	0	0	9	0	0	1	0	29
7:00 - 7:14	0	4	1	0	0	0	0	0	1	0	0	0	0	0
7:15 - 7:29	0	3	0	0	0	0	0	0	1	0	0	0	0	0
7:30 - 7:44	0	6	3	0	0	0	0	0	1	0	0	0	0	0
7:45 - 7:59	0	9	3	0	0	0	0	0	3	0	0	0	0	0
Hour Total	0	22	7	0	0	0	0	0	6	0	0	0	0	35
8:00 - 8:14	0	7	1	0	0	0	0	0	1	0	1	0	0	0
8:15 - 8:29	0	10	0	0	1	1	0	0	1	0	1	0	0	0
8:30 - 8:44	0	2	0	0	0	0	0	0	4	0	0	0	0	0
8:45 - 8:59	0	7	3	0	0	0	0	0	1	1	1	0	0	0
Hour Total	0	26	4	0	1	1	0	0	7	1	3	0	0	43
9:00 - 9:14	0	8	2	0	0	0	0	0	1	0	0	0	0	0
9:15 - 9:29	0	10	2	0	2	0	0	0	0	0	0	0	0	0

WEST COAST TRAFFIC COUNTERS

Location: DESERT CANYON RICE RD.BETWEEN W/B I-10 RAMPS 7 RAGSDALE RD.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
9:30 - 9:44	0	8	2	0	0	0	0	0	2	0	0	0	0	0
9:45 - 9:59	0	5	2	0	0	0	0	0	3	0	0	0	1	1
Hour Total	0	31	8	0	2	0	0	0	6	0	0	0	1	48
10:00 - 10:14	0	12	2	0	0	0	0	0	1	0	1	0	0	0
10:15 - 10:29	0	12	1	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:44	0	15	0	0	0	0	0	0	3	0	1	0	0	0
10:45 - 10:59	1	12	2	0	0	0	0	0	0	0	0	0	0	0
Hour Total	1	51	5	0	0	0	0	0	4	0	2	0	0	59
11:00 - 11:14	0	11	2	0	0	1	0	0	2	0	0	0	0	0
11:15 - 11:29	0	11	1	0	0	0	0	0	1	0	0	0	0	0
11:30 - 11:44	0	11	1	0	0	0	0	0	1	0	0	0	0	0
11:45 - 11:59	0	8	1	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	41	5	0	0	1	0	0	4	0	0	0	0	48
12:00 - 12:14	0	5	1	0	0	0	0	0	1	0	2	0	0	0
12:15 - 12:29	0	15	2	0	1	1	0	0	1	0	1	0	1	1
12:30 - 12:44	0	8	1	0	1	0	0	0	0	0	1	0	0	0
12:45 - 12:59	0	6	1	0	0	0	0	0	1	0	1	0	0	0
Hour Total	0	34	5	0	2	1	0	0	3	0	5	0	1	50
13:00 - 13:14	0	11	0	0	0	0	0	0	1	0	0	0	0	0
13:15 - 13:29	0	6	1	0	0	0	0	0	0	0	2	0	0	0
13:30 - 13:44	0	9	1	1	0	0	0	0	1	0	1	0	0	0
13:45 - 13:59	0	10	1	0	0	0	0	0	4	0	0	0	0	0
Hour Total	0	36	3	1	0	0	0	0	6	0	3	0	0	46
14:00 - 14:14	0	11	0	0	0	0	0	0	1	0	0	0	1	1
14:15 - 14:29	0	16	1	0	0	0	0	0	2	0	0	1	0	0
14:30 - 14:44	0	10	1	0	0	0	0	0	2	0	0	0	0	0
14:45 - 14:59	0	12	1	0	0	0	0	0	1	0	0	1	0	0
Hour Total	0	49	3	0	0	0	0	0	6	0	0	2	1	59
15:00 - 15:14	0	21	1	0	1	0	0	0	1	0	0	0	0	0
15:15 - 15:29	0	7	1	1	0	0	0	0	0	0	0	0	0	0
15:30 - 15:44	0	11	2	0	0	0	0	0	0	0	2	0	0	0
15:45 - 15:59	0	5	2	0	0	0	0	0	2	0	0	0	1	1
Hour Total	0	44	6	1	1	0	0	0	3	0	2	0	1	57
16:00 - 16:14	0	13	2	0	0	0	0	0	2	0	0	0	0	0
16:15 - 16:29	0	8	3	0	0	0	0	0	4	0	0	0	0	0
16:30 - 16:44	0	12	4	0	0	0	0	0	2	0	0	0	0	0
16:45 - 16:59	0	13	4	1	0	0	0	0	0	0	1	0	0	0
Hour Total	0	46	13	1	0	0	0	0	8	0	1	0	0	65
17:00 - 17:14	0	15	1	0	0	0	0	0	1	0	0	0	0	0
17:15 - 17:29	0	7	1	0	2	0	0	0	1	0	1	0	0	0
17:30 - 17:44	0	8	2	0	0	0	0	0	3	0	0	0	1	1
17:45 - 17:59	0	8	1	0	0	0	0	0	7	0	1	2	0	0
Hour Total	0	38	5	0	2	0	0	0	12	0	2	2	1	60
18:00 - 18:14	0	4	2	0	0	0	0	0	3	0	1	0	0	0
18:15 - 18:29	1	8	1	0	0	0	0	0	3	0	0	0	0	0
18:30 - 18:44	0	7	0	0	0	1	0	0	1	0	2	0	0	0
18:45 - 18:59	0	8	0	0	0	0	0	0	2	0	1	0	0	0

WEST COAST TRAFFIC COUNTERS

Location: DESERT CANYON RICE RD.BETWEEN W/B I-10 RAMPS 7 RAGSDALE RD.
Count Interval: 15 minutes
Count Date: Wednesday - November 29, 1989

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
Hour Total	1	27	3	0	0	1	0	0	9	0	4	0	0	44
19:00 - 19:14	0	6	2	0	0	0	0	0	0	0	0	0	0	0
19:15 - 19:29	0	5	0	0	0	0	0	0	0	0	2	0	0	0
19:30 - 19:44	0	4	0	0	0	0	0	0	1	0	0	0	0	0
19:45 - 19:59	0	3	0	0	0	0	0	0	3	0	0	0	0	0
Hour Total	0	18	2	0	0	0	0	0	4	0	2	0	0	24
20:00 - 20:14	0	8	0	0	0	0	0	0	2	0	1	0	0	0
20:15 - 20:29	0	3	0	0	0	0	0	0	0	0	3	0	0	0
20:30 - 20:44	0	6	0	0	0	0	0	0	3	0	0	0	0	0
20:45 - 20:59	0	4	0	0	0	0	0	0	0	0	3	0	0	0
Hour Total	0	21	0	0	0	0	0	0	5	0	7	0	0	32
21:00 - 21:14	0	5	0	0	0	0	0	0	1	0	2	0	0	0
21:15 - 21:29	0	7	1	0	0	0	0	0	1	0	0	0	0	0
21:30 - 21:44	0	1	2	0	0	0	0	0	3	0	0	0	0	0
21:45 - 21:59	0	4	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	17	3	0	0	0	0	0	5	0	2	0	0	27
22:00 - 22:14	0	1	0	0	0	0	0	0	7	0	0	0	0	0
22:15 - 22:29	0	3	5	0	0	0	0	0	5	0	0	0	0	0
22:30 - 22:44	0	4	1	0	0	0	0	0	5	0	3	1	0	0
23:45 - 22:59	0	6	1	0	0	0	0	0	3	0	2	2	0	0
Hour Total	0	14	7	0	0	0	0	0	20	0	5	3	0	48
23:00 - 23:14	0	3	0	0	0	0	0	0	4	0	1	0	0	0
23:15 - 23:29	0	7	0	0	0	0	0	0	4	0	1	0	0	0
23:30 - 23:44	0	10	1	0	0	0	0	0	3	0	1	0	0	0
23:45 - 23:59	0	8	1	0	0	0	0	0	0	0	1	1	0	0
Hour Total	0	28	2	0	0	0	0	0	11	0	4	1	0	42
Totals:	2	610	92	3	9	4	0	0	161	3	73	20	5	951
% of Totals:	0	64	10	0	1	0	0	0	17	0	8	2	1	100
% of AM:	0	25	4	0	0	0	0	0	7	0	4	1	0	42
% of PM:	0	39	5	0	1	0	0	0	10	0	4	1	0	58

Truck Summary:
Total Trucks (#3 thru #13): 370
% of Total Trucks: 39
% of AM Trucks: 18
% of PM Trucks: 21

Classification Legend:

Num	Definition	Num	Definiton	Num	Definiton
#1	Motocycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Car - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Truck, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Busses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

APPENDIX C
Existing Traffic Operating Conditions Level of Service Analysis Worksheets

```
1985 HCM:TWO-LANE HIGHWAYS
****************************************************************

   FACILITY LOCATION.... Eagle Mtn n/o Ragsdale
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1989 EXISTING
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION....


A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS.........................  14
   PERCENTAGE OF BUSES..........................  0
   PERCENTAGE OF RECREATIONAL VEHICLES.........  0
   DESIGN SPEED (MPH)...........................  60
   PEAK HOUR FACTOR.............................  .5
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........  100 / 0
   LANE WIDTH (FT)..............................  12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...  4
   PERCENT NO PASSING ZONES.....................  20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

                E      E      E      f      f      f
   LOS           T      B      R      w      d     HV
   ---       -----  -----  -----  -----  -----  -----
    A            2    1.8    2.2    .92    .71    .88

    B          2.2      2    2.5    .92    .71    .86

    C          2.2      2    2.5    .92    .71    .86

    D            2    1.6    1.6    .92    .71    .88

    E            2    1.6    1.6    .97    .71    .88

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):      12
   ACTUAL FLOW RATE:       24
         SERVICE
   LOS   FLOW RATE    V/C
   ---   ---------   -----
    A         193     .12
    B         376     .24
    C         611     .39
    D         995     .62
    E        1692       1

   LOS FOR GIVEN CONDITIONS: A
```

```
1985 HCM:TWO-LANE HIGHWAYS
****************************************************************

   FACILITY LOCATION.... Kaiser Rd n/o Desert Ctr Rice Rd
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1989 EXISTING
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION....

A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS........................  14
   PERCENTAGE OF BUSES.........................  0
   PERCENTAGE OF RECREATIONAL VEHICLES.........  0
   DESIGN SPEED (MPH)..........................  60
   PEAK HOUR FACTOR............................  .85
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........  60 / 40
   LANE WIDTH (FT).............................  12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...  4
   PERCENT NO PASSING ZONES....................  20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

              E       E       E       f       f       f
   LOS         T       B       R       w       d       HV
   ---      -----   -----   -----   -----   -----   -----
    A          2     1.8     2.2     .92     .94     .88

    B        2.2       2     2.5     .92     .94     .86

    C        2.2       2     2.5     .92     .94     .86

    D          2     1.6     1.6     .92     .94     .88

    E          2     1.6     1.6     .97     .94     .88

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):     51
   ACTUAL FLOW RATE:      60
         SERVICE
   LOS   FLOW RATE     V/C
   ---   ---------    -----
    A       255        .12
    B       498        .24
    C       809        .39
    D      1317        .62
    E      2240          1

   LOS FOR GIVEN CONDITIONS: A
```

```
1985 HCM:TWO-LANE HIGHWAYS
****************************************************************

   FACILITY LOCATION.... Kaiser Rd n/o Lake Tamarisk Dr
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1989 EXISTING
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION....

A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS........................  .14
   PERCENTAGE OF BUSES.........................  0
   PERCENTAGE OF RECREATIONAL VEHICLES.........  0
   DESIGN SPEED (MPH)..........................  60
   PEAK HOUR FACTOR............................  .82
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........  60 / 40
   LANE WIDTH (FT).............................  12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...  4
   PERCENT NO PASSING ZONES....................  20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

             E      E     E       f      f      f
   LOS        T      B     R       w      d      HV
   ---     -----  -----  -----  -----  -----  -----
    A         2    1.8    2.2    .92    .94       1

    B       2.2      2    2.5    .92    .94       1

    C       2.2      2    2.5    .92    .94       1

    D         2    1.6    1.6    .92    .94       1

    E         2    1.6    1.6    .97    .94       1

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):    49
   ACTUAL FLOW RATE:     60
         SERVICE
   LOS  FLOW RATE    V/C
   ---  ---------   -----
    A      290       .12
    B      580       .24
    C      943       .39
    D     1499       .62
    E     2549         1

   LOS FOR GIVEN CONDITIONS: A
```

L1,EX.

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                              Page-1
*************************************************************************

IDENTIFYING INFORMATION
-------------------------------------------------------------------------

AVERAGE RUNNING SPEED, MAJOR STREET............. 30

PEAK HOUR FACTOR................................ 1

AREA POPULATION................................. 10000

NAME OF THE EAST/WEST STREET.................... I-10 Eastbound

NAME OF THE NORTH/SOUTH STREET.................. Eagle Mountain

NAME OF THE ANALYST............................. GJH

DATE OF THE ANALYSIS (mm/dd/yy)................. 12/20/89

TIME PERIOD ANALYZED............................ Peak

OTHER INFORMATION:

INTERSECTION TYPE AND CONTROL
-------------------------------------------------------------------------

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN


TRAFFIC VOLUMES
-------------------------------------------------------------------------

            EB     WB     NB     SB
           ----   ----   ----   ----
LEFT         8      0      0      1

THRU         0      0      0      0

RIGHT        0      0      1      0


NUMBER OF LANES AND LANE USAGE
-------------------------------------------------------------------------

                EB         WB         NB         SB
             -------    -------    -------    -------
LANES           2          1          1          1

LANE USAGE  LT +  R     LTR
```

LI EX

```
ADJUSTMENT FACTORS                                            Page-2
--------------------------------------------------------------------

           PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
            GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
           -------  ----------  ----------------  -----------------
EASTBOUND   0.00       90             20                  N

WESTBOUND   0.00       90             20                  N

NORTHBOUND  0.00       90             20                  N

SOUTHBOUND  0.00       90             20                  N

VEHICLE COMPOSITION
--------------------------------------------------------------------

             % SU TRUCKS   % COMBINATION
              AND RV'S       VEHICLES      % MOTORCYCLES
             -----------   -------------   -------------
EASTBOUND         0              0               0

WESTBOUND         0              0               0

NORTHBOUND        0              0               0

SOUTHBOUND        0              0               0


CRITICAL GAPS
--------------------------------------------------------------------

               TABULAR VALUES  ADJUSTED  SIGHT DIST.    FINAL
                (Table 10-2)    VALUE    ADJUSTMENT   CRITICAL GAP
               --------------  --------  -----------  ------------
MINOR RIGHTS
            WB      5.50         5.50       0.00          5.50
            EB      5.50         5.50       0.00          5.50

MAJOR LEFTS
            SB      5.00         5.00       0.00          5.00
            NB      5.00         5.00       0.00          5.00

MINOR THROUGHS
            WB      6.00         6.00       0.00          6.00
            EB      6.00         6.00       0.00          6.00

MINOR LEFTS
            WB      6.50         6.50       0.00          6.50
            EB      6.50         6.50       0.00          6.50
```

```
CAPACITY AND LEVEL-OF-SERVICE                                  Page-3
----------------------------------------------------------------------

                   POTEN-    ACTUAL
          FLOW-    TIAL      MOVEMENT    SHARED      RESERVE
          RATE     CAPACITY  CAPACITY    CAPACITY    CAPACITY
MOVEMENT  v(pcph)  c (pcph)  c (pcph)    c  (pcph)   c = c  - v  LOS
                    p         M           SH          R   SH
          -------  --------  ---------  -----------  ----------- ---

MINOR STREET

  WB LEFT      0      919      918   >        918  >      . 918 >· A
     THROUGH   0      998      998   >     0  998  >    0  998 >  A
     RIGHT     0     1000     1000   >       1000  >      1000 >  A

MINOR STREET

  EB LEFT      9      918      917   >     0  917  >    0  909 >  A
     THROUGH   0      998      997   >        997  >       997 >  A
     RIGHT     0     1000     1000           1000         1000    A

MAJOR STREET

  NB LEFT      0     1000     1000           1000         1000    A
  SB LEFT      1     1000     1000           1000          999    A
```

L1 EX

L2EX

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                         Page-1
*********************************************************************

IDENTIFYING INFORMATION
---------------------------------------------------------------------

AVERAGE RUNNING SPEED, MAJOR STREET............. 30

PEAK HOUR FACTOR................................ 1

AREA POPULATION................................. 10000

NAME OF THE EAST/WEST STREET.................... I-10 Westbound

NAME OF THE NORTH/SOUTH STREET.................. Eagle Mountain

NAME OF THE ANALYST............................. GJH

DATE OF THE ANALYSIS (mm/dd/yy)................. 12/20/89

TIME PERIOD ANALYZED............................ Peak

OTHER INFORMATION:

INTERSECTION TYPE AND CONTROL
---------------------------------------------------------------------

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN


TRAFFIC VOLUMES
---------------------------------------------------------------------

           EB    WB    NB    SB
          ----  ----  ----  ----
LEFT        0     0     0     0

THRU        0     0     0     0

RIGHT       0     3     0    10


NUMBER OF LANES AND LANE USAGE
---------------------------------------------------------------------

                EB       WB       NB       SB
              -------  -------  -------  -------
LANES            1        2        1        1

LANE USAGE    LTR    LT +  R
```

L2EX

```
ADJUSTMENT FACTORS                                            Page-2
--------------------------------------------------------------------

           PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
            GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
           -------  ----------  ----------------  -----------------
EASTBOUND   0.00        90             20                 N

WESTBOUND   0.00        90             20                 N

NORTHBOUND  0.00        90             20                 N

SOUTHBOUND  0.00        90             20                 N

VEHICLE COMPOSITION
--------------------------------------------------------------------

             % SU TRUCKS   % COMBINATION
              AND RV'S       VEHICLES      % MOTORCYCLES
             -----------   -------------   -------------
EASTBOUND         0              0               0

WESTBOUND         0              0               0

NORTHBOUND        0              0               0

SOUTHBOUND        0              0               0


CRITICAL GAPS
--------------------------------------------------------------------

               TABULAR VALUES  ADJUSTED  SIGHT DIST.     FINAL
                (Table 10-2)    VALUE    ADJUSTMENT   CRITICAL GAP
               --------------  --------  -----------  ------------
MINOR RIGHTS
            WB      5.50         5.50       0.00          5.50
            EB      5.50         5.50       0.00          5.50

MAJOR LEFTS
            SB      5.00         5.00       0.00          5.00
            NB      5.00         5.00       0.00          5.00

MINOR THROUGHS
            WB      6.00         6.00       0.00          6.00
            EB      6.00         6.00       0.00          6.00

MINOR LEFTS
            WB      6.50         6.50       0.00          6.50
            EB      6.50         6.50       0.00          6.50
```

L2FX

```
----------------------------------------------------------------------

                     POTEN-    ACTUAL
             FLOW-   TIAL      MOVEMENT    SHARED      RESERVE
             RATE    CAPACITY  CAPACITY    CAPACITY    CAPACITY
MOVEMENT     v(pcph) c (pcph)  c (pcph)   c  (pcph)   c = c  - v  LOS
                      p           M         SH          R    SH
             ------- -------- --------- ------------ ------------ ---

MINOR STREET

  WB LEFT          0     910     910     >    0  910  >    0  910 >  A
     THROUGH       0     990     990     >       990  >       990 >  A
     RIGHT         3    1000    1000            1000           997    A

MINOR STREET

  EB LEFT          0     912     910     >       910  >       910 >  A
     THROUGH       0     995     995     >    0  995  >    0  995 >  A
     RIGHT         0    1000    1000     >      1000  >      1000 >  A

MAJOR STREET

  NB LEFT          0    1000    1000            1000          1000    A
  SB LEFT          0    1000    1000            1000          1000    A
```

L3EX

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                          Page-1
*********************************************************************

IDENTIFYING INFORMATION
---------------------------------------------------------------------

AVERAGE RUNNING SPEED, MAJOR STREET............. 30

PEAK HOUR FACTOR................................ 1

AREA POPULATION................................. 10000

NAME OF THE EAST/WEST STREET.................... Ragsdale Road

NAME OF THE NORTH/SOUTH STREET.................. Eagle Mountain

NAME OF THE ANALYST............................. GJH

DATE OF THE ANALYSIS (mm/dd/yy)................. 12/20/89

TIME PERIOD ANALYZED............................ Peak

OTHER INFORMATION:

INTERSECTION TYPE AND CONTROL
---------------------------------------------------------------------

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN


TRAFFIC VOLUMES
---------------------------------------------------------------------

           EB    WB    NB    SB
          ----  ----  ----  ----
LEFT       --     0     0     2

THRU       --     0     0    10

RIGHT      --     0     3     0


NUMBER OF LANES
---------------------------------------------------------------------

             EB        WB        NB        SB
           -------   -------   -------   -------
LANES        --         1         1         1
```

L3EX

```
ADJUSTMENT FACTORS                                              Page-2
----------------------------------------------------------------------

            PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
             GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
            -------  ----------  ----------------  -----------------
EASTBOUND    -----      ---           ---                 -

WESTBOUND    0.00       90            20                  N

NORTHBOUND   0.00       90            20                  N

SOUTHBOUND   0.00       90            20                  N


VEHICLE COMPOSITION
----------------------------------------------------------------------

               % SU TRUCKS   % COMBINATION
                AND RV'S       VEHICLES      % MOTORCYCLES
               -----------   -------------   -------------
EASTBOUND          ---            ---             ---

WESTBOUND           0              0               0

NORTHBOUND          0              0               0

SOUTHBOUND          0              0               0


CRITICAL GAPS
----------------------------------------------------------------------

               TABULAR VALUES   ADJUSTED   SIGHT DIST.     FINAL
                (Table 10-2)     VALUE     ADJUSTMENT   CRITICAL GAP
               --------------   --------   -----------  ------------
MINOR RIGHTS
           WB       5.50          5.50        0.00          5.50

MAJOR LEFTS
           SB       5.00          5.00        0.00          5.00

MINOR LEFTS
           WB       6.50          6.50        0.00          6.50
```

L3 EX

```
---------------------------------------------------------------------------

                  POTEN-    ACTUAL
          FLOW-   TIAL      MOVEMENT    SHARED      RESERVE
          RATE    CAPACITY  CAPACITY    CAPACITY    CAPACITY
MOVEMENT  v(pcph) c (pcph)  c (pcph)   c  (pcph)   c = c  - v  LOS
                   p         M          SH          R   SH
          ------- --------  ---------  ----------  ----------  ---

MINOR STREET

  WB LEFT      0      907      905   >       905  >      905 >  A
                                     >   0        >   0      >
     RIGHT     0     1000     1000   >      1000  >     1000 >  A

MAJOR STREET

  SB LEFT      2     1000     1000          1000             998   A
```

```
        1985 HCM:  UNSIGNALIZED INTERSECTIONS                       Page-1
        ********************************************************************

        IDENTIFYING INFORMATION
        --------------------------------------------------------------------

        AVERAGE RUNNING SPEED, MAJOR STREET............. 30

        PEAK HOUR FACTOR................................ .9

        AREA POPULATION................................. 10000

        NAME OF THE EAST/WEST STREET.................... I-10 EASTBOUND RAMPS

        NAME OF THE NORTH/SOUTH STREET..................
DESERT CENTER RICE ROAD

        NAME OF THE ANALYST............................. CDW

        DATE OF THE ANALYSIS (mm/dd/yy)................. 12/26/89

        TIME PERIOD ANALYZED............................ DAILY PEAK HOUR

        OTHER INFORMATION: 1989 EXISTING CONDITIONS

        INTERSECTION TYPE AND CONTROL
        --------------------------------------------------------------------

        INTERSECTION TYPE: 4-LEG

        MAJOR STREET DIRECTION: NORTH/SOUTH

        CONTROL TYPE EASTBOUND: STOP SIGN

        CONTROL TYPE WESTBOUND: STOP SIGN

        TRAFFIC VOLUMES
        --------------------------------------------------------------------

                    EB     WB     NB     SB
                   ----   ----   ----   ----
        LEFT        41      0      0     21

        THRU         2      0      1      0

        RIGHT        2      0      1      0

        NUMBER OF LANES AND LANE USAGE
        --------------------------------------------------------------------

                      EB        WB        NB        SB
                   -------   -------   -------   -------
        LANES          1         1         1         1

        LANE USAGE   LTR       LTR
```

L4EX

```
ADJUSTMENT FACTORS                                              Page-2
----------------------------------------------------------------------

            PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
             GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
            -------  ----------  ----------------  -----------------

EASTBOUND    0.00       90             20                  N

WESTBOUND    0.00       90             20                  N

NORTHBOUND   0.00       90             20                  N

SOUTHBOUND   0.00       90             20                  N

VEHICLE COMPOSITION
----------------------------------------------------------------------

              % SU TRUCKS   % COMBINATION
               AND RV'S       VEHICLES      % MOTORCYCLES
              -----------   -------------   -------------

EASTBOUND          1             27               0

WESTBOUND          0              0               0

NORTHBOUND         1             27               0

SOUTHBOUND         1             27               0


CRITICAL GAPS
----------------------------------------------------------------------

                TABULAR VALUES  ADJUSTED  SIGHT DIST.     FINAL
                 (Table 10-2)    VALUE    ADJUSTMENT  CRITICAL GAP
                --------------  --------  ----------  ------------
MINOR RIGHTS
           WB        5.50         5.50       0.00         5.50
           EB        5.50         5.50       0.00         5.50

MAJOR LEFTS
           SB        5.00         5.00       0.00         5.00
           NB        5.00         5.00       0.00         5.00

MINOR THROUGHS
           WB        6.00         6.00       0.00         6.00
           EB        6.00         6.00       0.00         6.00

MINOR LEFTS
           WB        6.50         6.50       0.00         6.50
           EB        6.50         6.50       0.00         6.50
```

L4EX

```
-----------------------------------------------------------------------

                   POTEN-    ACTUAL
          FLOW-    TIAL      MOVEMENT    SHARED      RESERVE
          RATE     CAPACITY  CAPACITY    CAPACITY    CAPACITY
MOVEMENT  v(pcph)  c (pcph)  c (pcph)   c  (pcph)   c = c  - v  LOS
                    p          M          SH          R   SH
          -------  --------  ---------  ----------- -----------  ---

MINOR STREET

  WB LEFT       0      891      872    >        872 >        872 >  A
     THROUGH    0      974      956    >    0   956 >    0   956 >  A
     RIGHT      0     1000     1000    >       1000 >       1000 >  A

MINOR STREET

  EB LEFT      58      894      878    >        878 >        820 >  A
     THROUGH    3      973      956    >  886   956 >  823   953 >A A
     RIGHT      3     1000     1000    >       1000 >        997 >  A

MAJOR STREET

  NB LEFT       0     1000     1000            1000         1000    A
  SB LEFT      30     1000     1000            1000          970    A
```

```
        1985 HCM:  UNSIGNALIZED INTERSECTIONS                        Page-1
        ***********************************************************************

        IDENTIFYING INFORMATION
        -----------------------------------------------------------------------

        AVERAGE RUNNING SPEED, MAJOR STREET.............. 30

        PEAK HOUR FACTOR................................. .9

        AREA POPULATION.................................. 10000

        NAME OF THE EAST/WEST STREET..................... I-10 WESTBOUND RAMPS

        NAME OF THE NORTH/SOUTH STREET...................
DESERT CENTER RICE ROAD

        NAME OF THE ANALYST.............................. CDK

        DATE OF THE ANALYSIS (mm/dd/yy).................. 12/26/89

        TIME PERIOD ANALYZED............................. DAILY PEAK HOUR

        OTHER INFORMATION: 1989 EXISTING CONDITIONS

        INTERSECTION TYPE AND CONTROL
        -----------------------------------------------------------------------

        INTERSECTION TYPE: 4-LEG

        MAJOR STREET DIRECTION: NORTH/SOUTH

        CONTROL TYPE EASTBOUND: STOP SIGN

        CONTROL TYPE WESTBOUND: STOP SIGN


        TRAFFIC VOLUMES
        -----------------------------------------------------------------------

                   EB    WB    NB    SB
                  ----  ----  ----  ----
        LEFT        0     0     1     0

        THRU        0     0    35    20

        RIGHT       0    17     0    24

        NUMBER OF LANES AND LANE USAGE
        -----------------------------------------------------------------------

                     EB         WB         NB         SB
                   -------    -------    -------    -------
        LANES         1          1          1          1

        LANE USAGE   LTR        LTR
```

L5 EX.

```
ADJUSTMENT FACTORS                                          Page-2
------------------------------------------------------------------

            PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
             GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
            -------  ----------  ----------------  -----------------
EASTBOUND    0.00        90             20                 N

WESTBOUND    0.00        90             20                 N

NORTHBOUND   0.00        90             20                 N

SOUTHBOUND   0.00        90             20                 N


VEHICLE COMPOSITION
------------------------------------------------------------------

              % SU TRUCKS  % COMBINATION
               AND RV'S      VEHICLES     % MOTORCYCLES
              -----------  -------------  -------------
EASTBOUND          1            27              0

WESTBOUND          1            27              0

NORTHBOUND         1            27              0

SOUTHBOUND         1            27              0


CRITICAL GAPS
------------------------------------------------------------------

                TABULAR VALUES  ADJUSTED  SIGHT DIST.     FINAL
                 (Table 10-2)    VALUE    ADJUSTMENT   CRITICAL GAP
                --------------  --------  -----------  ------------
MINOR RIGHTS
           WB        5.50         5.50       0.00          5.50
           EB        5.50         5.50       0.00          5.50

MAJOR LEFTS
           SB        5.00         5.00       0.00          5.00
           NB        5.00         5.00       0.00          5.00

MINOR THROUGHS
           WB        6.00         6.00       0.00          6.00
           EB        6.00         6.00       0.00          6.00

MINOR LEFTS
           WB        6.50         6.50       0.00          6.50
           EB        6.50         6.50       0.00          6.50
```

L5·EX

```
CAPACITY AND LEVEL-OF-SERVICE                                      Page-3
--------------------------------------------------------------------------


                     POTEN-    ACTUAL
             FLOW-   TIAL      MOVEMENT    SHARED       RESERVE
             RATE    CAPACITY  CAPACITY    CAPACITY     CAPACITY
MOVEMENT     v(pcph) c (pcph)  c (pcph)    c  (pcph)    c = c  - v  LOS
                      P         M           SH            R   SH
             ------- -------- --------- ------------ ------------ ---

MINOR STREET

  WB LEFT          0      831      830   >       830  >       830 >  A
     THROUGH       0      907      906   >  998  906  >  974  906 >A A
     RIGHT        24      998      998   >       998  >       974 >  A

MINOR STREET

  EB LEFT          0      826      813   >       813  >       813 >  A
     THROUGH       0      921      920   >    0  920  >    0  920 >  A
     RIGHT         0      998      998   >       998  >       998 >  A

MAJOR STREET

  NB LEFT          1     1000     1000          1000          999    A
  SB LEFT          0     1000     1000          1000         1000    A
```

L5 EX

APPENDIX D
Future Conditions Without the Project At-grade Crossing Analysis

EAGLE MOUNTAIN

Future No-Build Conditions

DELAY ANALYSIS

SAFETY ANALYSIS

P89246x0

25-Jan-90

File: RAIL1B.WK1

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs	1995 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO- TEC- TION	RELATIVE HAZARD (Pf)	NO-BUILD HAZARD INDEX
SEGMENT 1: EAGLE MOUNTAIN TO COLTON/SAN BERN. TRNSFR. STN.											
Parkside Dr.	2	332	65	1.5	0.3	0.00	0.0	31	8	0.2	2,058
Bay Dr.	2	676	65	1.5	0.6	0.01	1.0	31	8	0.2	4,192
Cleveland St.	2	74	65	1.5	0.1	0.00	0.0	31	9	0.11	252
66th Ave.	2	3,848	65	1.6	3.6	0.04	0.7	31	9	0.11	13,120
62nd Ave.	2	602	65	1.5	0.5	0.01	1.2	31	9	0.11	2,054
58th Ave.	2	774	65	1.5	0.7	0.01	0.9	31	8	0.2	4,801
Airport Blvd.	2	5,642	65	1.6	5.4	0.05	0.6	31	9	0.11	19,240
52nd Ave.	2	1,217	65	1.5	1.1	0.01	0.5	30	9	0.11	4,016
5th St.	2	252	65	1.5	0.2	0.00	0.0	28	8	0.2	1,411
50th Ave.	2	1,398	65	1.5	1.3	0.01	0.5	28	8	0.2	7,827
Dillon Rd.	2	7,130	65	1.6	6.9	0.06	0.5	31	9	0.11	24,312
Monroe St.	2	9,124	30	2.6	14.9	0.21	0.8	28	9	0.11	28,100
Tipton	2	111	40	1.9	0.1	0.00	0.0	36	8	0.2	797
Broadway	2	1,832	40	2.0	2.2	0.03	0.8	36	9	0.11	7,253
Apache Trail	2	3,712	40	2.0	4.6	0.06	0.8	6	9	0.11	2,450
Hargrave	2	3,700	40	2.0	4.6	0.06	0.8	35	9	0.11	14,245
San Gorgonio	2	3,626	40	2.0	4.5	0.06	0.8	34	9	0.11	13,562
22nd St.	2	6,969	40	2.1	9.0	0.11	0.7	35	9	0.11	26,829
North Sunset	2	652	40	2.0	0.8	0.01	0.8	35	9	0.11	2,508
Highland Springs	2	283	40	1.9	0.3	0.00	0.0	36	9	0.11	1,120
Pennsylvania	2	615	50	1.7	0.6	0.01	1.0	35	9	0.11	2,366
Beaumont St.	2	4,179	50	1.8	4.5	0.05	0.7	35	9	0.11	16,091
California	2	1,414	50	1.7	1.5	0.02	0.8	35	9	0.11	5,443
Veile Ave.	2	492	50	1.7	0.5	0.01	1.2	35	8	0.2	3,442
San Timoteo Canyon Rd.	2	443	50	1.7	0.5	0.01	1.2	36	9	0.11	1,752
Live Oak Canyon	2	947	40	2.0	1.1	0.02	1.1	6	9	0.11	625
Alessandro Rd.	2	3,815	40	2.0	4.7	0.06	0.8	50	9	0.11	20,985

EAGLE MOUNTAIN

Future No-Build Conditions

DELAY ANALYSIS

SAFETY ANALYSIS

P89246x0

25-Jan-90

File: RAIL1B.WK1

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs	1995 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	NO-BUILD HAZARD INDEX
San Timoteo Canyon Rd.	2	5,968	40	2.1	7.6	0.09	0.7	50	9	0.11	32,823
Beaumont Ave.	2	958	40	2.0	1.1	0.02	1.1	50	9	0.11	5,268
Whittier Ave.	2	174	40	1.9	0.2	0.00	0.0	50	9	0.11	957
Hunts Ln.	2	11,780	50	2.0	14.2	0.13	0.5	50	9	0.11	64,791
						1.16					
SEGMENT 2: KAISER SPUR TO INDUSTRY TRANSFER STATION											
Milliken Ave.	6	24,728	65	1.7	24.5	0.21	0.5	35	9	0.11	95,203
Vineyard Ave.	4	23,459	60	1.8	25.6	0.21	0.5	35	9	0.11	90,319
						0.42					
SEGMENT 3: INDUSTRY TRANS. STN. TO INDUSTRY BRANCH POINT											
Nogales St.	5	29,554	60	1.8	32.3	0.26	0.5	28	9	0.11	91,028
Sunset Ave.	5	16,711	60	1.7	16.9	0.16	0.6	28	9	0.11	51,470
						0.42					
SEGMENT 4: INDUSTRY BRANCH POINT TO S. PACIFIC'S L.A. YARD											
Ramona	4	32,133	30	2.9	58.9	0.65	0.7	28	9	0.11	98,969
Valley	4	20,221	25	3.0	38.5	0.59	0.9	28	9	0.11	62,280
						1.24					
SEGMENT 5: SOUTHERN PACIFIC'S L.A. YARD to N. ORANGE COUNTY											
Washington Blvd.	4	25,942	10	6.5	110.0	3.30	1.8	NA	NA	NA	ERR
Santa Fe Ave.	4	16,435	10	6.1	64.7	2.25	2.1	NA	NA	NA	ERR

EAGLE MOUNTAIN

Future No-Build Conditions

DELAY ANALYSIS

SAFETY ANALYSIS

P89246x0

25-Jan-90

File: RAIL1B.WK1

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs	1995 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	NO-BUILD HAZARD INDEX
25th Street	4	4,834	10	5.6	17.5	0.72	2.5	NA	NA	NA	ERR
E. Alameda St.	2	8,594	10	6.1	33.8	1.16	2.1	NA	NA	NA	ERR
41st Street	2	10,656	10	6.3	43.3	1.39	1.9	24	4	0.34	86,953
Vernon Ave.	5	12,998	10	5.8	49.1	1.87	2.3	4	4	0.34	17,677
55th St.	2	6,649	10	5.9	25.4	0.92	2.2	28	4	0.34	63,301
Slauson Ave.	4	30,400	10	6.8	133.7	3.73	1.7	28	8	0.2	170,238
Gage Ave.	3	18,369	20	3.7	42.8	0.73	1.0	28	8	0.2	102,865
Florence Ave.	6	28,262	20	3.5	63.6	1.19	1.1	28	8	0.2	158,268
Nadeau St.	5	13,427	20	3.3	28.3	0.60	1.3	28	9	0.11	41,357
Santa Fe Ave.	4	9,560	15	4.1	25.2	0.68	1.6	20	9	0.11	21,033
Long Beach Blvd.	4	19,658	15	4.4	56.0	1.31	1.4	20	9	0.11	43,247
State St.	4	12,890	20	3.4	27.5	0.56	1.2	10	9	0.11	14,179
Otis Ave.	4	12,890	20	3.4	27.5	0.56	1.2	30	9	0.11	42,538
Atlantic Ave.	6	26,855	20	3.5	60.0	1.14	1.1	10	9	0.11	29,540
Garfield Ave.	6	25,888	20	3.5	57.5	1.11	1.2	10	9	0.11	28,477
Firestone Blvd.	8	46,298	20	3.7	108.1	1.91	1.1	6	9	0.11	30,557
Paramount Blvd.	6	26,533	20	3.5	59.2	1.13	1.1	10	9	0.11	29,186
Lakewood Blvd.	6	36,523	20	3.7	85.8	1.48	1.0	10	9	0.11	40,175
Woodruff Ave.	4	15,039	20	3.4	32.7	0.65	1.2	4	9	0.11	6,617
Studebaker Rd.	4	13,127	20	3.4	28.1	0.57	1.2	6	8	0.2	15,752
Pioneer Blvd.	4	16,059	20	3.5	35.1	0.68	1.2	6	9	0.11	10,599
San Antonio Blvd.	4	18,906	20	3.5	42.2	0.79	1.1	2	9	0.11	4,159
Rosecrans Ave.	6	30,077	20	3.6	68.3	1.26	1.1	6	9	0.11	19,851
Artesia Blvd.	6	27,175	20	3.5	60.8	1.16	1.1	12	9	0.11	35,871
Knott Ave.	4	21,740	20	3.6	49.6	0.89	1.1	12	9	0.11	28,697
Western Ave.	4	16,305	20	3.5	35.7	0.69	1.2	12	9	0.11	21,523
Beach Blvd.	6	36,958	20	3.7	87.0	1.49	1.0	30	9	0.11	121,961
Stanton Ave.	4	12,609	20	3.4	26.9	0.55	1.2	30	9	0.11	41,610

EAGLE MOUNTAIN

DELAY ANALYSIS

Future No-Build Conditions

SAFETY ANALYSIS

P89246x0

25-Jan-90

File: RAIL1B.WK1

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs	1995 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO- TEC- TION	RELATIVE HAZARD (Pf)	NO-BUILD HAZARD INDEX
						36.47					
SEGMENT 6: COLTON YARD to LA VERNE TRANSFER STATION											
Pepper Ave.	2	12,364	10	6.4	51.6	1.57	1.8	2	8	0.2	4,946
Sycamore Ave.	2	4,327	10	5.7	16.0	0.62	2.3	2	3	0.34	2,943
Riverside Ave.	4	14,837	10	6.0	57.7	2.05	2.1	2	9	0.11	3,264
Alder Ave.	2	5,069	10	5.8	19.0	0.72	2.3	2	9	0.11	1,115
Mango Ave.	2	7,418	10	6.0	28.7	1.02	2.1	2	8	0.2	2,967
Sierra Ave.	4	15,208	10	6.0	59.4	2.10	2.1	2	8	0.2	6,083
Juniper Ave.	2	6,429	10	5.9	24.5	0.89	2.2	2	9	0.11	1,414
Milliken Ave.	2	6,182	10	5.9	23.5	0.86	2.2	2	9	0.11	1,360
Haven Ave.	2	9,149	10	6.1	36.3	1.22	2.0	2	9	0.11	2,013
Archibald Ave.	4	4,204	10	5.6	15.2	0.63	2.5	2	9	0.11	925
Base Line St.	4	9,891	10	5.8	37.1	1.42	2.3	2	9	0.11	2,176
Grove Ave.	4	10,880	10	5.8	41.1	1.55	2.3	2	9	0.11	2,394
Campus Ave.	4	5,935	10	5.7	21.7	0.88	2.4	2	3	0.34	4,036
Euclid Ave.	6	30,415	10	6.3	124.1	4.09	2.0	2	9	0.11	6,691
San Antonio Ave.	4	9,149	10	5.8	34.2	1.32	2.3	2	3	0.34	6,222
Mountain Ave.	4	16,568	10	6.1	65.3	2.27	2.1	2	9	0.11	3,645
Benson Ave.	2	4,327	10	5.7	16.0	0.62	2.3	2	1	1	8,655
Central Ave.	4	17,310	10	6.1	68.6	2.35	2.1	2	9	0.11	3,808
Towne Ave.	2	9,843	10	6.2	39.5	1.30	2.0	2	9	0.11	2,165
Garey Ave.	4	14,466	10	6.0	56.1	2.01	2.1	4	9	0.11	6,365
Pine St.	2	9,843	10	6.2	39.5	1.30	2.0	28	1	1	275,603
Fulton Rd.	2	14,466	10	6.7	62.5	1.77	1.7	8	9	0.11	12,730
White Ave.	4	11,255	10	5.9	42.6	1.60	2.3	8	9	0.11	9,904
D Street	2	6,182	10	5.9	23.5	0.86	2.2	4	1	1	24,728

EAGLE MOUNTAIN

Future No-Build Conditions

DELAY ANALYSIS

SAFETY ANALYSIS

P89246x0
25-Jan-90
File: RAIL1B.WK1

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs	1995 DELAY PER VEH. (min)	EXISTING/ NO-BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	NO-BUILD HAZARD INDEX

						35.02					
SEGMENT 7: LA VERNE TRANS. STN. to IRWINDALE TRANS. STN.											
Sunflower Ave.	2	4,505	10	5.7	16.7	0.64	2.3	4	9	0.11	1,982
Covina Blvd.	2	3,650	10	5.7	13.4	0.53	2.4	4	9	0.11	1,606
Barranca Ave.	2	9,385	10	6.2	37.4	1.25	2.0	4	8	0.2	7,508
Hollenbeck Ave.	2	7,821	10	6.0	30.4	1.06	2.1	4	8	0.2	6,256
Azusa Ave.	6	13,451	10	5.8	50.5	1.97	2.3	4	9	0.11	5,919
Irwindale Ave.	2	6,483	10	5.9	24.7	0.90	2.2	4	8	0.2	5,186

						6.35					
SEGMENT 8: IRWINDALE TRANS. STN. to INDUSTRY BRANCHPOINT											
Ramona Blvd./Downing Av.	4	15,641	20	3.4	34.1	0.67	1.2	4	9	0.11	6,882
Francisquito Ave.	4	15,641	20	3.4	34.1	0.67	1.2	4	9	0.11	6,882

						1.34					

APPENDIX E

Future Conditions Without the Project Traffic Operations Analysis Worksheets

```
1985 HCM:TWO-LANE HIGHWAYS
****************************************************************

   FACILITY LOCATION.... Eagle Mtn n/o Ragsdale
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1995 NO BLD
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION....


A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS.........................  14
   PERCENTAGE OF BUSES..........................  0
   PERCENTAGE OF RECREATIONAL VEHICLES.........  0
   DESIGN SPEED (MPH)...........................  60
   PEAK HOUR FACTOR.............................  .5
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........  100 / 0
   LANE WIDTH (FT)..............................  12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...  4
   PERCENT NO PASSING ZONES....................  20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

              E      E      E      f      f      f
   LOS         T      B      R      w      d      HV
   ---      -----  -----  -----  -----  -----  -----
    A          2    1.8    2.2    .92    .71     .88

    B        2.2      2    2.5    .92    .71     .86

    C        2.2      2    2.5    .92    .71     .86

    D          2    1.6    1.6    .92    .71     .88

    E          2    1.6    1.6    .97    .71     .88

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):     15
   ACTUAL FLOW RATE:      30
          SERVICE
   LOS   FLOW RATE    V/C
   ---   ---------   -----
    A       193       .12
    B       376       .24
    C       611       .39
    D       995       .62
    E      1692         1

   LOS FOR GIVEN CONDITIONS: A
```

```
1985 HCM:TWO-LANE HIGHWAYS
****************************************************************

   FACILITY LOCATION.... Kaiser Rd n/o Desert Ctr Rice Rd
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1995 NO BUILD
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION....

A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS........................  14
   PERCENTAGE OF BUSES.........................  0
   PERCENTAGE OF RECREATIONAL VEHICLES.........  0
   DESIGN SPEED (MPH)..........................  60
   PEAK HOUR FACTOR............................  .85
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........  60 / 40
   LANE WIDTH (FT).............................  12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...  4
   PERCENT NO PASSING ZONES....................  20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

               E        E       E       f       f       f
   LOS          T        B       R       w       d       HV
   ---       -----    -----   -----   -----   -----   -----
    A           2      1.8     2.2     .92     .94     .88

    B         2.2        2     2.5     .92     .94     .86

    C         2.2        2     2.5     .92     .94     .86

    D           2      1.6     1.6     .92     .94     .88

    E           2      1.6     1.6     .97     .94     .88

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):     63
   ACTUAL FLOW RATE:      74
          SERVICE
   LOS   FLOW RATE    V/C
   ---   ---------   -----
    A        255      .12
    B        498      .24
    C        809      .39
    D       1317      .62
    E       2240        1

   LOS FOR GIVEN CONDITIONS: A
```

```
1985 HCM:TWO-LANE HIGHWAYS
***************************************************************

   FACILITY LOCATION.... Kaiser Rd n/o Lake Tamarisk Dr
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1995 NO BUILD
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION....


A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS........................  .14
   PERCENTAGE OF BUSES.........................  0
   PERCENTAGE OF RECREATIONAL VEHICLES.........  0
   DESIGN SPEED (MPH)..........................  60
   PEAK HOUR FACTOR............................  .82
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........  60 / 40
   LANE WIDTH (FT).............................  12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...  4
   PERCENT NO PASSING ZONES....................  20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

              E      E      E      f      f      f
   LOS         T      B      R      w      d      HV
   ---      -----  -----  -----  -----  -----  -----
    A          2    1.8    2.2    .92    .94      1

    B        2.2      2    2.5    .92    .94      1

    C        2.2      2    2.5    .92    .94      1

    D          2    1.6    1.6    .92    .94      1

    E          2    1.6    1.6    .97    .94      1

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):     60
   ACTUAL FLOW RATE:      73
          SERVICE
   LOS   FLOW RATE     V/C
   ---   ---------    -----
    A        290       .12
    B        580       .24
    C        943       .39
    D       1499       .62
    E       2549         1

   LOS FOR GIVEN CONDITIONS: A
```

```
******************************************************************

IDENTIFYING INFORMATION
------------------------------------------------------------------

AVERAGE RUNNING SPEED, MAJOR STREET............. 30

PEAK HOUR FACTOR................................ .9

AREA POPULATION................................. 10000

NAME OF THE EAST/WEST STREET.................... I-10 Eastbound

NAME OF THE NORTH/SOUTH STREET.................. Eagle Mountain Road

NAME OF THE ANALYST............................. CDW

DATE OF THE ANALYSIS (mm/dd/yy)................. 12/26/89

TIME PERIOD ANALYZED............................ Daily Peak Hour

OTHER INFORMATION: 1995 NO BUILD CONDITIONS

INTERSECTION TYPE AND CONTROL
------------------------------------------------------------------

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES
------------------------------------------------------------------

            EB    WB    NB    SB
           ----  ----  ----  ----
LEFT        10     0     0     1

THRU         0     0     0     0

RIGHT        0     0     1     0

NUMBER OF LANES AND LANE USAGE
------------------------------------------------------------------

               EB       WB       NB       SB
             -------  -------  -------  -------
LANES           2        1        1        1

LANE USAGE  LT + R    LTR
```

L1NB

```
ADJUSTMENT FACTORS                                              Page-2
-----------------------------------------------------------------------

          PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
           GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
          -------  ----------  ----------------  -----------------
EASTBOUND   0.00       90             20                 N

WESTBOUND   0.00       90             20                 N

NORTHBOUND  0.00       90             20                 N

SOUTHBOUND  0.00       90             20                 N


VEHICLE COMPOSITION
-----------------------------------------------------------------------

            % SU TRUCKS   % COMBINATION
             AND RV'S       VEHICLES      % MOTORCYCLES
            -----------   -------------   -------------
EASTBOUND        1             27               0

WESTBOUND        0              0               0

NORTHBOUND       1             27               0

SOUTHBOUND       1             27               0


CRITICAL GAPS
-----------------------------------------------------------------------

              TABULAR VALUES  ADJUSTED  SIGHT DIST.     FINAL
               (Table 10-2)    VALUE    ADJUSTMENT   CRITICAL GAP
              --------------  --------  -----------  ------------
MINOR RIGHTS
           WB      5.50         5.50        0.00         5.50
           EB      5.50         5.50        0.00         5.50

MAJOR LEFTS
           SB      5.00         5.00        0.00         5.00
           NB      5.00         5.00        0.00         5.00

MINOR THROUGHS
           WB      6.00         6.00        0.00         6.00
           EB      6.00         6.00        0.00         6.00

MINOR LEFTS
           WB      6.50         6.50        0.00         6.50
           EB      6.50         6.50        0.00         6.50
```

L1NB

```
CAPACITY AND LEVEL-OF-SERVICE                                     Page-3
------------------------------------------------------------------------

                      POTEN-    ACTUAL
            FLOW-     TIAL      MOVEMENT    SHARED      RESERVE
            RATE      CAPACITY  CAPACITY    CAPACITY    CAPACITY
MOVEMENT    v(pcph)   c (pcph)  c (pcph)    c  (pcph)   c = c  - v  LOS
                       P         M           SH          R   SH
            -------   --------  ---------  ----------- ----------- ---

MINOR STREET

  NB LEFT        0       918       918   >        918  >       918 >  A
     THROUGH     0       998       997   >     0  997  >     0 997 >  A
     RIGHT       0      1000      1000   >       1000  >      1000 >  A

MINOR STREET

  EB LEFT       14       918       917   >     0  917  >     0 903 >  A
     THROUGH     0       998       997   >        997  >       997 >  A
     RIGHT       0      1000      1000           1000         1000    A

MAJOR STREET

  NB LEFT        0      1000      1000           1000         1000    A
  SB LEFT        1      1000      1000           1000          999    A
```

L|NB

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                          Page-1
*******************************************************************

IDENTIFYING INFORMATION
-------------------------------------------------------------------

AVERAGE RUNNING SPEED, MAJOR STREET............. 30

PEAK HOUR FACTOR................................ .9

AREA POPULATION................................. 10000

NAME OF THE EAST/WEST STREET.................... I-10 Westbound

NAME OF THE NORTH/SOUTH STREET.................. Eagle Mountain

NAME OF THE ANALYST............................. CDW

DATE OF THE ANALYSIS (mm/dd/yy)................. 12/26/89

TIME PERIOD ANALYZED............................ DAILY PEAK HOUR

OTHER INFORMATION: 1995 NO BUILD CONDITIONS

INTERSECTION TYPE AND CONTROL
-------------------------------------------------------------------

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES
-------------------------------------------------------------------

          EB    WB    NB    SB
         ----  ----  ----  ----
LEFT       0     0     0     0

THRU       0     0     0     0

RIGHT      0     4     0    12

NUMBER OF LANES AND LANE USAGE
-------------------------------------------------------------------

             EB        WB        NB        SB
          -------   -------   -------   -------
LANES        1         2         1         1

LANE USAGE  LTR     LT + R
```

L2NB

```
ADJUSTMENT FACTORS                                                Page-2
------------------------------------------------------------------------

             PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
              GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
             -------  ----------  ----------------  -----------------

EASTBOUND     0.00        90             20                 N

WESTBOUND     0.00        90             20                 N

NORTHBOUND    0.00        90             20                 N

SOUTHBOUND    0.00        90             20                 N

VEHICLE COMPOSITION
------------------------------------------------------------------------

              % SU TRUCKS   % COMBINATION
               AND RV'S       VEHICLES      % MOTORCYCLES
              -----------   -------------   -------------

EASTBOUND          0              0                0

WESTBOUND          1             27                0

NORTHBOUND         0              0                0

SOUTHBOUND         1             27                0


CRITICAL GAPS
------------------------------------------------------------------------

                TABULAR VALUES   ADJUSTED   SIGHT DIST.     FINAL
                 (Table 10-2)     VALUE     ADJUSTMENT   CRITICAL GAP
                --------------   --------   -----------  ------------
MINOR RIGHTS
            WB       5.50          5.50        0.00          5.50
            EB       5.50          5.50        0.00          5.50

MAJOR LEFTS
            SB       5.00          5.00        0.00          5.00
            NB       5.00          5.00        0.00          5.00

MINOR THROUGHS
            WB       6.00          6.00        0.00          6.00
            EB       6.00          6.00        0.00          6.00

MINOR LEFTS
            WB       6.50          6.50        0.00          6.50
            EB       6.50          6.50        0.00          6.50
```

L2NB

L2NB

```
------------------------------------------------------------------------

                     POTEN-    ACTUAL
             FLOW-   TIAL      MOVEMENT    SHARED       RESERVE
             RATE    CAPACITY  CAPACITY    CAPACITY     CAPACITY
MOVEMENT     v(pcph) c (pcph)  c (pcph)   c  (pcph)    c = c  - v  LOS
                      P         M           SH            R   SH
             ------- --------  ---------  ------------  ----------- ---

MINOR STREET

  WB LEFT      0       907       907    >   0  907  >    0  907 >  A
     THROUGH   0       986       986    >      986  >       986 >  A
     RIGHT     6      1000      1000          1000             994   A

MINOR STREET

  EB LEFT      0       909       906    >      906  >       906 >  A
     THROUGH   0       993       993    >   0  993  >    0  993 >  A
     RIGHT     0      1000      1000    >     1000  >      1000 >  A

MAJOR STREET

  NB LEFT      0      1000      1000          1000            1000   A
  SB LEFT      0      1000      1000          1000            1000   A
```

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                              Page-1
*********************************************************************

IDENTIFYING INFORMATION
---------------------------------------------------------------------

AVERAGE RUNNING SPEED, MAJOR STREET.............. 30

PEAK HOUR FACTOR................................. .9

AREA POPULATION.................................. 10000

NAME OF THE EAST/WEST STREET..................... Ragsdale Road

NAME OF THE NORTH/SOUTH STREET................... Eagle Mountain

NAME OF THE ANALYST.............................. CDW

DATE OF THE ANALYSIS (mm/dd/yy).................. 12/26/89

TIME PERIOD ANALYZED............................. DAILY PEAK HOUR

OTHER INFORMATION: 1995 NO BUILD CONDITIONS

INTERSECTION TYPE AND CONTROL
---------------------------------------------------------------------

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN


TRAFFIC VOLUMES
---------------------------------------------------------------------

            EB    WB    NB    SB
           ----  ----  ----  ----
LEFT        --     0     0     3

THRU        --     0     0    12

RIGHT       --     0     4     0


NUMBER OF LANES
---------------------------------------------------------------------

                EB        WB        NB        SB
             -------   -------   -------   -------
LANES           --         1         1         1
```

L3NB

```
ADJUSTMENT FACTORS                                              Page-2
----------------------------------------------------------------------

          PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
           GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
          -------  ----------  ----------------  -----------------
EASTBOUND  -----      ---            ---                 -

WESTBOUND   0.00       90             20                 N

NORTHBOUND  0.00       90             20                 N

SOUTHBOUND  0.00       90             20                 N


VEHICLE COMPOSITION
----------------------------------------------------------------------

            % SU TRUCKS   % COMBINATION
             AND RV'S       VEHICLES      % MOTORCYCLES
            -----------  -------------    -------------
EASTBOUND       ---           ---              ---

WESTBOUND        0             0                0

NORTHBOUND       1            27                0

SOUTHBOUND       1            27                0


CRITICAL GAPS
----------------------------------------------------------------------

             TABULAR VALUES  ADJUSTED  SIGHT DIST.     FINAL
              (Table 10-2)    VALUE    ADJUSTMENT   CRITICAL GAP
             --------------  --------  -----------  ------------
MINOR RIGHTS
          WB      5.50         5.50       0.00          5.50

MAJOR LEFTS
          SB      5.00         5.00       0.00          5.00

MINOR LEFTS
          WB      6.50         6.50       0.00          6.50
```

L3NB

```
CAPACITY AND LEVEL-OF-SERVICE                                  Page-3
---------------------------------------------------------------------

                    POTEN-   ACTUAL
            FLOW-   TIAL     MOVEMENT   SHARED      RESERVE
            RATE    CAPACITY CAPACITY   CAPACITY    CAPACITY
MOVEMENT    v(pcph) c (pcph) c (pcph)   c  (pcph)   c = c  - v  LOS
                     P        M          SH          R   SH
            ------- -------- --------- ----------- ----------- ---

MINOR STREET

  WB LEFT      0      901      899   >      899  >      899 >  A
     --                              >  0        >  0       >
     RIGHT     0     1000     1000   >     1000  >     1000 >  A

MAJOR STREET

  SB LEFT      4     1000     1000         1000          996   A
```

L3NBL

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                          Page-1
*******************************************************************

IDENTIFYING INFORMATION
-------------------------------------------------------------------

AVERAGE RUNNING SPEED, MAJOR STREET............. 30

PEAK HOUR FACTOR................................ .9

AREA POPULATION................................. 10000

NAME OF THE EAST/WEST STREET.................... I-10 EASTBOUND RAMPS

NAME OF THE NORTH/SOUTH STREET..................
DESERT CENTER RICE ROAD

NAME OF THE ANALYST............................. CDW

DATE OF THE ANALYSIS (mm/dd/yy)................. 12/26/89

TIME PERIOD ANALYZED............................ DAILY PEAK HOUR

OTHER INFORMATION: 1995 NO BUILD CONDITIONS

INTERSECTION TYPE AND CONTROL
-------------------------------------------------------------------

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN


TRAFFIC VOLUMES
-------------------------------------------------------------------

             EB     WB     NB     SB
            ----   ----   ----   ----
LEFT         50      0      0     26

THRU          3      0      1      0

RIGHT         3      0      1      0


NUMBER OF LANES AND LANE USAGE
-------------------------------------------------------------------

                 EB        WB        NB        SB
               -------   -------   -------   -------
LANES             1         1         1         1

LANE USAGE      LTR       LTR
```

L4 NB

```
ADJUSTMENT FACTORS
----------------------------------------------------------------

           PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
            GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
           -------  ----------  ----------------  -----------------
EASTBOUND   0.00        90             20                 N

WESTBOUND   0.00        90             20                 N

NORTHBOUND  0.00        90             20                 N

SOUTHBOUND  0.00        90             20                 N

VEHICLE COMPOSITION
----------------------------------------------------------------

             % SU TRUCKS   % COMBINATION
              AND RV'S       VEHICLES      % MOTORCYCLES
             -----------   -------------   -------------
EASTBOUND         1             27               0

WESTBOUND         0              0               0

NORTHBOUND        1             27               0

SOUTHBOUND        1             27               0


CRITICAL GAPS
----------------------------------------------------------------

               TABULAR VALUES  ADJUSTED  SIGHT DIST.     FINAL
                (Table 10-2)     VALUE   ADJUSTMENT  CRITICAL GAP
               --------------  --------  ----------- ------------
MINOR RIGHTS
            WB      5.50         5.50       0.00         5.50
            EB      5.50         5.50       0.00         5.50

MAJOR LEFTS
            SB      5.00         5.00       0.00         5.00
            NB      5.00         5.00       0.00         5.00

MINOR THROUGHS
            WB      6.00         6.00       0.00         6.00
            EB      6.00         6.00       0.00         6.00

MINOR LEFTS
            WB      6.50         6.50       0.00         6.50
            EB      6.50         6.50       0.00         6.50
```

L4NB

```
----------------------------------------------------------------------

                   POTEN-    ACTUAL
          FLOW-    TIAL      MOVEMENT    SHARED       RESERVE
          RATE     CAPACITY  CAPACITY    CAPACITY     CAPACITY
MOVEMENT  v(pcph)  c (pcph)  c (pcph)    c  (pcph)    c = c  - v  LOS
                    p          M         SH           R   SH
          -------  --------  ---------  -----------  ----------- ---

MINOR STREET

  WB LEFT      0       883      862    >       862  >        862 >  A
     THROUGH   0       968      949    >   0   949  >    0   949 >  A
     RIGHT     0      1000     1000    >      1000  >       1000 >  A

MINOR STREET

  EB LEFT     61       889      872    >       872  >        811 >  A
     THROUGH   4       967      949    > 882   949  >  813   945 >A A
     RIGHT     4      1000     1000    >      1000  >        996 >  A

MAJOR STREET

  NB LEFT      0      1000     1000           1000          1000    A
  SB LEFT     32      1000     1000           1000           968    A
```

LANB

```
        1985 HCM:  UNSIGNALIZED INTERSECTIONS                        Page-1
        *******************************************************************

        IDENTIFYING INFORMATION
        -------------------------------------------------------------------

        AVERAGE RUNNING SPEED, MAJOR STREET............. 30

        PEAK HOUR FACTOR................................ .9

        AREA POPULATION................................. 10000

        NAME OF THE EAST/WEST STREET.................... I-10 WESTBOUND RAMPS

        NAME OF THE NORTH/SOUTH STREET..................
DESERT CENTER RICE ROAD

        NAME OF THE ANALYST............................. CDW

        DATE OF THE ANALYSIS (mm/dd/yy)................. 12/26/89

        TIME PERIOD ANALYZED............................ DAILY PEAK HOUR

        OTHER INFORMATION: 1995 NO BUILD CONDITIONS

        INTERSECTION TYPE AND CONTROL
        -------------------------------------------------------------------

        INTERSECTION TYPE: 4-LEG

        MAJOR STREET DIRECTION: NORTH/SOUTH

        CONTROL TYPE EASTBOUND: STOP SIGN

        CONTROL TYPE WESTBOUND: STOP SIGN

        TRAFFIC VOLUMES
        -------------------------------------------------------------------

                    EB     WB     NB     SB
                   ----   ----   ----   ----
        LEFT        0      0      1      0

        THRU        0      0     43     25

        RIGHT       0     21      0     29

        NUMBER OF LANES AND LANE USAGE
        -------------------------------------------------------------------

                       EB         WB         NB         SB
                     -------    -------    -------    -------
        LANES           1          1          1          1

        LANE USAGE     LTR        LTR
```

L5NB

```
ADJUSTMENT FACTORS                                              Page-2
----------------------------------------------------------------------

            PERCENT  RIGHT TURN  CURB RADIUS (ft)  ACCELERATION LANE
             GRADE     ANGLE     FOR RIGHT TURNS    FOR RIGHT TURNS
            -------  ----------  ----------------  -----------------
EASTBOUND    0.00        90             20                 N

WESTBOUND    0.00        90             20                 N

NORTHBOUND   0.00        90             20                 N

SOUTHBOUND   0.00        90             20                 N


VEHICLE COMPOSITION
----------------------------------------------------------------------

              % SU TRUCKS   % COMBINATION
               AND RV'S       VEHICLES      % MOTORCYCLES
              -----------   -------------   -------------
EASTBOUND          1             27               0

WESTBOUND          1             27               0

NORTHBOUND         1             27               0

SOUTHBOUND         1             27               0


CRITICAL GAPS
----------------------------------------------------------------------

                TABULAR VALUES  ADJUSTED  SIGHT DIST.     FINAL
                 (Table 10-2)    VALUE    ADJUSTMENT   CRITICAL GAP
                --------------  --------  -----------  ------------
MINOR RIGHTS
            WB       5.50         5.50        0.00          5.50
            EB       5.50         5.50        0.00          5.50

MAJOR LEFTS
            SB       5.00         5.00        0.00          5.00
            NB       5.00         5.00        0.00          5.00

MINOR THROUGHS
            WB       6.00         6.00        0.00          6.00
            EB       6.00         6.00        0.00          6.00

MINOR LEFTS
            WB       6.50         6.50        0.00          6.50
            EB       6.50         6.50        0.00          6.50
```

L5NB

```
------------------------------------------------------------------------

                 POTEN-   ACTUAL
         FLOW-   TIAL     MOVEMENT   SHARED      RESERVE
         RATE    CAPACITY CAPACITY   CAPACITY    CAPACITY
MOVEMENT v(pcph) c (pcph) c (pcph)  c  (pcph)   c = c  - v  LOS
                  P        M         SH          R   SH
         ------- -------- --------- ----------- ----------- ---

MINOR STREET

  WB LEFT     0      811     811    >        811 >       811 >  A
     THROUGH  0      886     885    >  998   885 >  972  885 >A A
     RIGHT   26      998     998    >        998 >       972 >  A

MINOR STREET

  EB LEFT     0      804     791    >        791 >       791 >  A
     THROUGH  0      903     902    >    0   902 >    0  902 >  A
     RIGHT    0      998     998    >        998 >       998 >  A

MAJOR STREET

  NB LEFT     1     1000    1000            1000         999    A
  SB LEFT     0     1000    1000            1000        1000    A
```

L5NB

APPENDIX F
Future Conditions With the Project At-grade Crossing Analysis

EAGLE MOUNTAIN

Future Build Conditions

DELAY ANALYSIS

Alternative Route 1

SAFETY ANALYSIS

P89246x0

25-Jan-90

File: RAIL1C.WK1

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs)	1995 DELAY PER VEH. (min)	BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	BUILD HAZARD INDEX
SEGMENT 1: EAGLE MOUNTAIN TO COLTON/SAN BERN. TRNSFR. STN.											
Parkside Dr.	2	332	65	1.5	0.3	0.00	0.0	40.4	8	0.2	2,682
Bay Dr.	2	676	65	1.5	0.6	0.01	1.0	40.4	8	0.2	5,463
Cleveland St.	2	74	65	1.5	0.1	0.00	0.0	40.4	9	0.11	328
66th Ave.	2	3,848	65	1.6	3.6	0.04	0.7	40.4	9	0.11	17,099
62nd Ave.	2	602	65	1.5	0.5	0.01	1.2	40.4	9	0.11	2,677
58th Ave.	2	774	65	1.5	0.7	0.01	0.9	40.4	8	0.2	6,257
Airport Blvd.	2	5,642	65	1.6	5.4	0.05	0.6	40.4	9	0.11	25,074
52nd Ave.	2	1,217	65	1.5	1.1	0.01	0.5	39.4	9	0.11	5,274
5th St.	2	252	65	1.5	0.2	0.00	0.0	37.4	8	0.2	1,885
50th Ave.	2	1,398	65	1.5	1.3	0.01	0.5	37.4	8	0.2	10,455
Dillon Rd.	2	7,130	65	1.6	6.9	0.06	0.5	40.4	9	0.11	31,684
Monroe St.	2	9,124	30	2.6	14.9	0.21	0.8	37.4	9	0.11	37,534
Tipton	2	111	40	1.9	0.1	0.00	0.0	45.4	8	0.2	1,005
Broadway	2	1,832	40	2.0	2.2	0.03	0.8	45.4	9	0.11	9,147
Apache Trail	2	3,712	40	2.0	4.6	0.06	0.8	15.4	9	0.11	6,289
Hargrave	2	3,700	40	2.0	4.6	0.06	0.8	44.4	9	0.11	18,071
San Gorgonio	2	3,626	40	2.0	4.5	0.06	0.8	43.4	9	0.11	17,312
22nd St.	2	6,969	40	2.1	9.0	0.11	0.7	44.4	9	0.11	34,035
North Sunset	2	652	40	2.0	0.8	0.01	0.8	44.4	9	0.11	3,182
Highland Springs	2	283	40	1.9	0.3	0.00	0.0	45.4	9	0.11	1,412
Pennsylvania	2	615	50	1.7	0.6	0.01	1.0	44.4	9	0.11	3,002
Beaumont St.	2	4,179	50	1.8	4.5	0.05	0.7	44.4	9	0.11	20,413
California	2	1,414	50	1.7	1.5	0.02	0.8	44.4	9	0.11	6,904
Veile Ave.	2	492	50	1.7	0.5	0.01	1.2	44.4	8	0.2	4,366
San Timoteo Canyon Rd.	2	443	50	1.7	0.5	0.01	1.2	45.4	9	0.11	2,210
Live Oak Canyon	2	947	40	2.0	1.1	0.02	1.1	15.4	9	0.11	1,603
Alessandro Rd.	2	3,815	40	2.0	4.7	0.06	0.8	59.4	9	0.11	24,930

EAGLE MOUNTAIN

DELAY ANALYSIS

Future Build Conditions

P89246x0

25-Jan-90

File: RAIL1C.WK1

Alternative Route 1

SAFETY ANALYSIS

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs)	1995 DELAY PER VEH. (min)	BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	BUILD HAZARD INDEX
San Timoteo Canyon Rd.	2	5,968	40	2.1	7.6	0.09	0.7	59.4	9	0.11	38,993
Beaumont Ave.	2	958	40	2.0	1.1	0.02	1.1	59.4	9	0.11	6,259
Whittier Ave.	2	174	40	1.9	0.2	0.00	0.0	59.4	9	0.11	1,137
Hunts Ln.	2	11,780	50	2.0	14.2	0.13	0.5	59.4	9	0.11	76,972
						1.16					423,653
SEGMENT 2: KAISER SPUR TO INDUSTRY TRANSFER STATION											
Milliken Ave.	6	24,728	65	1.7	24.5	0.21	0.5	40.2	9	0.11	109,347
Vineyard Ave.	4	23,459	60	1.8	25.6	0.21	0.5	40.2	9	0.11	103,738
						0.42					213,085
SEGMENT 3: INDUSTRY TRANS. STN. TO INDUSTRY BRANCH POINT											
Nogales St.	5	29,554	60	1.8	32.3	0.26	0.5	32	9	0.11	99,767
Sunset Ave.	5	16,711	60	1.7	16.9	0.16	0.6	32	9	0.11	56,412
						0.42					156,179
SEGMENT 4: INDUSTRY BRANCH POINT TO S. PACIFIC'S L.A. YARD											
Ramona	4	32,133	30	2.9	58.9	0.65	0.7	32	9	0.11	113,108
Valley	4	20,221	25	3.0	38.5	0.59	0.9	32	9	0.11	71,178
						1.24					
SEGMENT 5: SOUTHERN PACIFIC'S L.A. YARD to N. ORANGE COUNTY											
Washington Blvd.	4	25,942	10	6.5	110.0	3.30	1.8	NA	NA	NA	ERR
Santa Fe Ave.	4	16,435	10	6.1	64.7	2.25	2.1	NA	NA	NA	ERR

EAGLE MOUNTAIN

Future Build Conditions

DELAY ANALYSIS

Alternative Route 1

SAFETY ANALYSIS

P89246x0

25-Jan-90

File: RAIL1C.WK1

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs)	1995 DELAY PER VEH. (min)	BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TECTION	RELATIVE HAZARD (Pf)	BUILD HAZARD INDEX
25th Street	4	4,834	10	5.6	17.5	0.72	2.5	NA	NA	NA	ERR
E. Alameda St.	2	8,594	10	6.1	33.8	1.16	2.1	NA	NA	NA	ERR
41st Street	2	10,656	10	6.3	43.3	1.39	1.9	25.2	4	0.34	91,301
Vernon Ave.	5	12,998	10	5.8	49.1	1.87	2.3	5.2	4	0.34	22,980
55th St.	2	6,649	10	5.9	25.4	0.92	2.2	29.2	4	0.34	66,014
Slauson Ave.	4	30,400	10	6.8	133.7	3.73	1.7	29.2	8	0.2	177,534
Gage Ave.	3	18,369	20	3.7	42.8	0.73	1.0	29.2	8	0.2	107,273
Florence Ave.	6	28,262	20	3.5	63.6	1.19	1.1	29.2	8	0.2	165,050
Nadeau St.	5	13,427	20	3.3	28.3	0.60	1.3	29.2	9	0.11	43,129
Santa Fe Ave.	4	9,560	15	4.1	25.2	0.68	1.6	21.2	9	0.11	22,295
Long Beach Blvd.	4	19,658	15	4.4	56.0	1.31	1.4	21.2	9	0.11	45,842
State St.	4	12,890	20	3.4	27.5	0.56	1.2	11.2	9	0.11	15,881
Otis Ave.	4	12,890	20	3.4	27.5	0.56	1.2	31.2	9	0.11	44,240
Atlantic Ave.	6	26,855	20	3.5	60.0	1.14	1.1	11.2	9	0.11	33,085
Garfield Ave.	6	25,888	20	3.5	57.5	1.11	1.2	11.2	9	0.11	31,894
Firestone Blvd.	8	46,298	20	3.7	108.1	1.91	1.1	7.2	9	0.11	36,668
Paramount Blvd.	6	26,533	20	3.5	59.2	1.13	1.1	11.2	9	0.11	32,688
Lakewood Blvd.	6	36,523	20	3.7	85.8	1.48	1.0	11.2	9	0.11	44,996
Woodruff Ave.	4	15,039	20	3.4	32.7	0.65	1.2	5.2	9	0.11	8,602
Studebaker Rd.	4	13,127	20	3.4	28.1	0.57	1.2	7.2	8	0.2	18,902
Pioneer Blvd.	4	16,059	20	3.5	35.1	0.68	1.2	7.2	9	0.11	12,719
San Antonio Blvd.	4	18,906	20	3.5	42.2	0.79	1.1	3.2	9	0.11	6,655
Rosecrans Ave.	6	30,077	20	3.6	68.3	1.26	1.1	7.2	9	0.11	23,821
Artesia Blvd.	6	27,175	20	3.5	60.8	1.16	1.1	13.2	9	0.11	39,458
Knott Ave.	4	21,740	20	3.6	49.6	0.89	1.1	13.2	9	0.11	31,566
Western Ave.	4	16,305	20	3.5	35.7	0.69	1.2	13.2	9	0.11	23,675
Beach Blvd.	6	36,958	20	3.7	87.0	1.49	1.0	31.2	9	0.11	126,839
Stanton Ave.	4	12,609	20	3.4	26.9	0.55	1.2	31.2	9	0.11	43,275

EAGLE MOUNTAIN

DELAY ANALYSIS

Future Build Conditions

P89246x0

25-Jan-90

File: RAIL1C.WK1

Alternative Route 1

SAFETY ANALYSIS

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs)	1995 DELAY PER VEH. (min)	BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	BUILD HAZARD INDEX
						36.47					
SEGMENT 6: COLTON YARD to LA VERNE TRANSFER STATION											
Pepper Ave.	2	12,364	10	6.4	51.6	1.57	1.8	5	8	0.2	12,364
Sycamore Ave.	2	4,327	10	5.7	16.0	0.62	2.3	5	3	0.34	7,357
Riverside Ave.	4	14,837	10	6.0	57.7	2.05	2.1	5	9	0.11	8,160
Alder Ave.	2	5,069	10	5.8	19.0	0.72	2.3	5	9	0.11	2,788
Mango Ave.	2	7,418	10	6.0	28.7	1.02	2.1	5	8	0.2	7,418
Sierra Ave.	4	15,208	10	6.0	59.4	2.10	2.1	5	8	0.2	15,208
Juniper Ave.	2	6,429	10	5.9	24.5	0.89	2.2	5	9	0.11	3,536
Milliken Ave.	2	6,182	10	5.9	23.5	0.86	2.2	5	9	0.11	3,400
Haven Ave.	2	9,149	10	6.1	36.3	1.22	2.0	5	9	0.11	5,032
Archibald Ave.	4	4,204	10	5.6	15.2	0.63	2.5	5	9	0.11	2,312
Base Line St.	4	9,891	10	5.8	37.1	1.42	2.3	5	9	0.11	5,440
Grove Ave.	4	10,880	10	5.8	41.1	1.55	2.3	5	9	0.11	5,984
Campus Ave.	4	5,935	10	5.7	21.7	0.88	2.4	5	3	0.34	10,089
Euclid Ave.	6	30,415	10	6.3	124.1	4.09	2.0	5	9	0.11	16,728
San Antonio Ave.	4	9,149	10	5.8	34.2	1.32	2.3	5	3	0.34	15,554
Mountain Ave.	4	16,568	10	6.1	65.3	2.27	2.1	5	9	0.11	9,112
Benson Ave.	2	4,327	10	5.7	16.0	0.62	2.3	5	1	1	21,637
Central Ave.	4	17,310	10	6.1	68.6	2.35	2.1	5	9	0.11	9,520
Towne Ave.	2	9,843	10	6.2	39.5	1.30	2.0	5	9	0.11	5,414
Garey Ave.	4	14,466	10	6.0	56.1	2.01	2.1	7	9	0.11	11,139
Pine St.	2	9,843	10	6.2	39.5	1.30	2.0	31	1	1	305,132
Fulton Rd.	2	14,466	10	6.7	62.5	1.77	1.7	11	9	0.11	17,504
White Ave.	4	11,255	10	5.9	42.6	1.60	2.3	11	9	0.11	13,618
D Street	2	6,182	10	5.9	23.5	0.86	2.2	7	1	1	43,274

EAGLE MOUNTAIN

DELAY ANALYSIS

Future Build Conditions

P89246x0

25-Jan-90

File: RAIL1C.WK1

Alternative Route 1

SAFETY ANALYSIS

STREET NAME	LANES	1995 ADT	TRAIN SPEED (mph)	1995 ELAPSED TIME (min)	1995 TOTAL VEH. DELAYED (veh)	1995 TOTAL DELAY TIME (veh-hrs)	1995 DELAY PER VEH. (min)	BUILD DAILY NUMBER OF TRAINS	TYPE OF PRO-TEC-TION	RELATIVE HAZARD (Pf)	BUILD HAZARD INDEX
						35.02					
SEGMENT 7: LA VERNE TRANS. STN. to IRWINDALE TRANS. STN.											
Sunflower Ave.	2	4,505	10	5.7	16.7	0.64	2.3	5.8	9	0.11	2,874
Covina Blvd.	2	3,650	10	5.7	13.4	0.53	2.4	5.8	9	0.11	2,328
Barranca Ave.	2	9,385	10	6.2	37.4	1.25	2.0	5.8	8	0.2	10,886
Hollenbeck Ave.	2	7,821	10	6.0	30.4	1.06	2.1	5.8	8	0.2	9,072
Azusa Ave.	6	13,451	10	5.8	50.5	1.97	2.3	5.8	9	0.11	8,582
Irwindale Ave.	2	6,483	10	5.9	24.7	0.90	2.2	5.8	8	0.2	7,520
						6.35					
SEGMENT 8: IRWINDALE TRANS. STN. to INDUSTRY BRANCHPOINT											
Ramona Blvd./Downing Av.	4	15,641	20	3.4	34.1	0.67	1.2	4	9	0.11	6,882
Francisquito Ave.	4	15,641	20	3.4	34.1	0.67	1.2	4	9	0.11	6,882
						1.34					

APPENDIX G
Future Conditions With the Project Traffic Operations Analysis Worksheets

```
1985 HCM:TWO-LANE HIGHWAYS
****************************************************************

   FACILITY LOCATION.... Kaiser Rd n/o Desert Ctr Rice Rd
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1995 BUILD
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION.... FILE:  S3BLDA

A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS........................   .05
   PERCENTAGE OF BUSES.........................   0
   PERCENTAGE OF RECREATIONAL VEHICLES.........   0
   DESIGN SPEED (MPH)..........................   60
   PEAK HOUR FACTOR............................   .83
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........   60 / 40
   LANE WIDTH (FT).............................   12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...   4
   PERCENT NO PASSING ZONES....................   20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

              E      E      E      f      f      f
   LOS         T      B      R      w      d      HV
   ---      -----  -----  -----  -----  -----  -----
    A          2    1.8    2.2    .92    .94        1

    B        2.2      2    2.5    .92    .94        1

    C        2.2      2    2.5    .92    .94        1

    D          2    1.6    1.6    .92    .94        1

    E          2    1.6    1.6    .97    .94        1

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):    179
   ACTUAL FLOW RATE:     216
          SERVICE
   LOS   FLOW RATE    V/C
   ---   ---------   -----
    A       290       .12
    B       581       .24
    C       944       .39
    D      1501       .62
    E      2552         1

   LOS FOR GIVEN CONDITIONS: A
```

```
1985 HCM:TWO-LANE HIGHWAYS
****************************************************************

   FACILITY LOCATION.... Kaiser Rd n/o Lake Tamarisk Dr
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1995 BUILD
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION.... FILE:  S4BLDA


A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS........................  .05
   PERCENTAGE OF BUSES.........................  0
   PERCENTAGE OF RECREATIONAL VEHICLES.........  0
   DESIGN SPEED (MPH)..........................  60
   PEAK HOUR FACTOR............................  .83
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........  60 / 40
   LANE WIDTH (FT).............................  12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...  4
   PERCENT NO PASSING ZONES....................  20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

             E      E      E      f      f      f
   LOS        T      B      R      w      d      HV
   ---     -----  -----  -----  -----  -----  -----
    A          2    1.8    2.2    .92    .94      1

    B        2.2      2    2.5    .92    .94      1

    C        2.2      2    2.5    .92    .94      1

    D          2    1.6    1.6    .92    .94      1

    E          2    1.6    1.6    .97    .94      1

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):   176
   ACTUAL FLOW RATE:    212
          SERVICE
   LOS   FLOW RATE    V/C
   ---   ---------   -----
    A       290       .12
    B       581       .24
    C       944       .39
    D      1501       .62
    E      2552         1

   LOS FOR GIVEN CONDITIONS: A
```

```
1985 HCM:TWO-LANE HIGHWAYS
****************************************************************

   FACILITY LOCATION.... Eagle Mtn n/o Ragsdale
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1995 BUILD
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION.... FILE:  S1BLDA

A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS........................  70
   PERCENTAGE OF BUSES.........................  0
   PERCENTAGE OF RECREATIONAL VEHICLES.........  0
   DESIGN SPEED (MPH)..........................  60
   PEAK HOUR FACTOR............................  .61
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........  60 / 40
   LANE WIDTH (FT).............................  12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...  4
   PERCENT NO PASSING ZONES....................  20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

               E      E      E      f      f      f
   LOS          T      B      R      w      d      HV
   ---       -----  -----  -----  -----  -----  -----
    A           2    1.8    2.2    .92    .94    .59

    B         2.2      2    2.5    .92    .94    .54

    C         2.2      2    2.5    .92    .94    .54

    D           2    1.6    1.6    .92    .94    .59

    E           2    1.6    1.6    .97    .94    .59

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):     44
   ACTUAL FLOW RATE:      72
         SERVICE
   LOS   FLOW RATE    V/C
   ---   ---------   -----
    A        171      .12
    B        316      .24
    C        513      .39
    D        883      .62
    E       1502        1

   LOS FOR GIVEN CONDITIONS: A
```

```
1985 HCM:TWO-LANE HIGHWAYS
****************************************************************

   FACILITY LOCATION.... Eagle Mtn n/o Aqueduct
   ANALYST.............. cdw
   TIME OF ANALYSIS..... 1995 BUILD
   DATE OF ANALYSIS..... 7/13/90
   OTHER INFORMATION.... FILE:  S2BLDA

A) ADJUSTMENT FACTORS
   -------------------------------------------------------------
   PERCENTAGE OF TRUCKS.........................   99
   PERCENTAGE OF BUSES..........................   0
   PERCENTAGE OF RECREATIONAL VEHICLES.........   1
   DESIGN SPEED (MPH)...........................   60
   PEAK HOUR FACTOR.............................   .83
   DIRECTIONAL DISTRIBUTION (UP/DOWN)..........   60 / 40
   LANE WIDTH (FT)..............................   12
   USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...   4
   PERCENT NO PASSING ZONES.....................   20

B) CORRECTION FACTORS
   -------------------------------------------------------------
   LEVEL TERRAIN

             E       E       E       f       f       f
   LOS        T       B       R       w       d       HV
   ---      -----   -----   -----   -----   -----   -----
    A          2     1.8     2.2     .92     .94       .5

    B        2.2       2     2.5     .92     .94      .45

    C        2.2       2     2.5     .92     .94      .45

    D          2     1.6     1.6     .92     .94       .5

    E          2     1.6     1.6     .97     .94       .5

C) LEVEL OF SERVICE RESULTS
   -------------------------------------------------------------
   INPUT VOLUME(vph):     29
   ACTUAL FLOW RATE:      35
          SERVICE
   LOS   FLOW RATE    V/C
   ---   ---------   -----
    A       145       .12
    B       264       .24
    C       429       .39
    D       752       .62
    E      1279         1

   LOS FOR GIVEN CONDITIONS: A
```

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                       Page-1
******************************************************************

IDENTIFYING INFORMATION                                    L1BLD
__________________________________________________________________

AVERAGE RUNNING SPEED, MAJOR STREET............ 30

PEAK HOUR FACTOR............................... .9

AREA POPULATION................................ 10000

NAME OF THE EAST/WEST STREET................... I-10 Eastbound

NAME OF THE NORTH/SOUTH STREET................. Eagle Mountain Road

NAME OF THE ANALYST............................ CDW

DATE OF THE ANALYSIS (mm/dd/yy)................ 2/26/90

TIME PERIOD ANALYZED........................... Daily Peak Hour

OTHER INFORMATION: 1995 BUILD CONDITIONS

INTERSECTION TYPE AND CONTROL
__________________________________________________________________

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN


TRAFFIC VOLUMES
__________________________________________________________________

            EB     WB     NB     SB
           ----   ----   ----   ----
LEFT        25      0      0      2

THRU         0      0      0      0

RIGHT        0      0      1      0


NUMBER OF LANES AND LANE USAGE
__________________________________________________________________

              EB        WB        NB        SB
            ------    ------    ------    ------
LANES         2         1         1         1

LANE USAGE  LT +  R    LTR
```

L1BLD

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	1	27	0
WESTBOUND	0	0	0
NORTHBOUND	1	27	0
SOUTHBOUND	1	27	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	WB	5.50	5.50	0.00	5.50
	EB	5.50	5.50	0.00	5.50
MAJOR LEFTS					
	SB	5.00	5.00	0.00	5.00
	NB	5.00	5.00	0.00	5.00
MINOR THROUGHS					
	WB	6.00	6.00	0.00	6.00
	EB	6.00	6.00	0.00	6.00
MINOR LEFTS					
	WB	6.50	6.50	0.00	6.50
	EB	6.50	6.50	0.00	6.50

L1BLD

```
                      POTEN-    ACTUAL
             FLOW-    TIAL      MOVEMENT   SHARED      RESERVE
             RATE     CAPACITY  CAPACITY   CAPACITY    CAPACITY
MOVEMENT     v(pcph)  c (pcph)  c (pcph)   c  (pcph)   c = c  - v  LOS
                       P         M          SH          R   SH
             -------  --------  --------  ----------  ----------  ---

MINOR STREET

  WB LEFT       0        917      916    >       916 >       916 >  A
     THROUGH    0        997      996    >   0   996 >   0   996 >  A
     RIGHT      0       1000     1000    >      1000 >      1000 >  A

MINOR STREET

  EB LEFT      31        917      915    >   0   915 >   0   885 >  A
     THROUGH    0        997      995    >       995 >       995 >  A
     RIGHT      0       1000     1000           1000        1000    A

MAJOR STREET

  NB LEFT       0       1000     1000           1000        1000    A
  SB LEFT       2       1000     1000           1000         998    A
```

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                         Page-1
*****************************************************************

IDENTIFYING INFORMATION                                LZ BLD
_________________________________________________________________

AVERAGE RUNNING SPEED, MAJOR STREET.............. 30

PEAK HOUR FACTOR................................. .9

AREA POPULATION.................................. 10000

NAME OF THE EAST/WEST STREET..................... I-10 Westbound

NAME OF THE NORTH/SOUTH STREET................... Eagle Mountain

NAME OF THE ANALYST.............................. CDW

DATE OF THE ANALYSIS (mm/dd/yy).................. 2/26/90

TIME PERIOD ANALYZED............................. DAILY PEAK HOUR

OTHER INFORMATION: 1995 BUILD CONDITIONS

INTERSECTION TYPE AND CONTROL
_________________________________________________________________

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES
_________________________________________________________________

            EB    WB    NB    SB
           ----  ----  ----  ----
LEFT         0     0     0     0

THRU         0     0    15     1

RIGHT        0     5     0    27

NUMBER OF LANES AND LANE USAGE
_________________________________________________________________

              EB        WB        NB        SB
            ------    ------    ------    ------
LANES         1         2         1         1

LANE USAGE   LTR      LT +  R
```

L2BLD

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	0	0	0
WESTBOUND	1	27	0
NORTHBOUND	1	27	0
SOUTHBOUND	1	27	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	WB	5.50	5.50	0.00	5.50
	EB	5.50	5.50	0.00	5.50
MAJOR LEFTS					
	SB	5.00	5.00	0.00	5.00
	NB	5.00	5.00	0.00	5.00
MINOR THROUGHS					
	WB	6.00	6.00	0.00	6.00
	EB	6.00	6.00	0.00	6.00
MINOR LEFTS					
	WB	6.50	6.50	0.00	6.50
	EB	6.50	6.50	0.00	6.50

L2BLD

```
CAPACITY AND LEVEL-OF-SERVICE                            Page-3
---------------------------------------------------------------

                  POTEN-   ACTUAL
          FLOW-   TIAL     MOVEMENT   SHARED     RESERVE
          RATE    CAPACITY CAPACITY   CAPACITY   CAPACITY
MOVEMENT  v(pcph) c (pcph) c (pcph)  c  (pcph)  c = c  - v  LOS
                    p       M         SH        R   SH
          ------- -------- --------  ---------  ----------  ---

MINOR STREET

  WB LEFT     0       872      872  > 0   872 >  0   872 >  A
     THROUGH  0       950      950  >     950 >      950 >  A
     RIGHT    7       999      999        999        992    A

MINOR STREET

  EB LEFT     0       882      878  >     878 >      878 >  A
     THROUGH  0       966      966  > 0   966 >  0   966 >  A
     RIGHT    0       999      999  >     999 >      999 >  A

MAJOR STREET

  NB LEFT     0      1000     1000       1000       1000    A
  SB LEFT     0      1000     1000       1000       1000    A
```

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                          Page-1
*********************************************************************
```

L3BLP

```
IDENTIFYING INFORMATION
_____________________________________________________________________

AVERAGE RUNNING SPEED, MAJOR STREET.............. 30

PEAK HOUR FACTOR................................. .9

AREA POPULATION.................................. 10000

NAME OF THE EAST/WEST STREET..................... Ragsdale Road

NAME OF THE NORTH/SOUTH STREET................... Eagle Mountain

NAME OF THE ANALYST.............................. CDW

DATE OF THE ANALYSIS (mm/dd/yy).................. 2/26/90

TIME PERIOD ANALYZED............................. DAILY PEAK HOUR

OTHER INFORMATION: 1995 BUILD CONDITIONS

INTERSECTION TYPE AND CONTROL
_____________________________________________________________________

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN


TRAFFIC VOLUMES
_____________________________________________________________________

            EB     WB     NB     SB
           ----   ----   ----   ----
LEFT        --      0      0      3

THRU        --      0     13     28

RIGHT       --      0      4      0

NUMBER OF LANES
_____________________________________________________________________

               EB         WB         NB         SB
             -------    -------    -------    -------
LANES          --          1          1          1
```

L3BLD

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	0	0	0
NORTHBOUND	1	27	0
SOUTHBOUND	1	27	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	WB	5.50	5.50	0.00	5.50
MAJOR LEFTS					
	SB	5.00	5.00	0.00	5.00
MINOR LEFTS					
	WB	6.50	6.50	0.00	6.50

L3BLP

```
CAPACITY AND LEVEL-OF-SERVICE                                   Page-3
-----------------------------------------------------------------------

                    POTEN-   ACTUAL
           FLOW-    TIAL     MOVEMENT    SHARED      RESERVE
           RATE     CAPACITY CAPACITY    CAPACITY    CAPACITY
MOVEMENT   v(pcph)  c (pcph)  c (pcph)    c  (pcph)   c = c  - v  LOS
                      P         M          SH          R   SH
           -------  -------- --------   ---------   ----------  ---

MINOR STREET

  WB LEFT       0       869      867   >       867  >        867 >  A
                                       >   0        >    0        >E
     RIGHT      0       999      999   >       999  >        999 >  A

MAJOR STREET

  SB LEFT       4      1000     1000          1000           996    A
```

```
1985 HCM:  UNSIGNALIZED INTERSECTIONS                        Page-1
*******************************************************************

IDENTIFYING INFORMATION                                  L4BLD
-------------------------------------------------------------------

AVERAGE RUNNING SPEED, MAJOR STREET.............. 30

PEAK HOUR FACTOR................................. .9

AREA POPULATION.................................. 10000

NAME OF THE EAST/WEST STREET..................... I-10 EASTBOUND RAMPS

NAME OF THE NORTH/SOUTH STREET..................
DESERT CENTER RICE ROAD

NAME OF THE ANALYST.............................. CDW

DATE OF THE ANALYSIS (mm/dd/yy).................. 2/26/90

TIME PERIOD ANALYZED............................. DAILY PEAK HOUR

OTHER INFORMATION: 1995 BUILD CONDITIONS

INTERSECTION TYPE AND CONTROL
-------------------------------------------------------------------

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES
-------------------------------------------------------------------

             EB     WB     NB     SB
            ----   ----   ----   ----
LEFT         80      0      0     34

THRU          3      0      1      0

RIGHT         3      0      1      0

NUMBER OF LANES AND LANE USAGE
-------------------------------------------------------------------

                 EB         WB         NB         SB
              -------    -------    -------    -------
LANES            1          1          1          1

LANE USAGE      LTR        LTR
```

LABLD

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	1	27	0
WESTBOUND	0	0	0
NORTHBOUND	1	27	0
SOUTHBOUND	1	27	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	WB	5.50	5.50	0.00	5.50
	EB	5.50	5.50	0.00	5.50
MAJOR LEFTS					
	SB	5.00	5.00	0.00	5.00
	NB	5.00	5.00	0.00	5.00
MINOR THROUGHS					
	WB	6.00	6.00	0.00	6.00
	EB	6.00	6.00	0.00	6.00
MINOR LEFTS					
	WB	6.50	6.50	0.00	6.50
	EB	6.50	6.50	0.00	6.50

L4BLD

```
CAPACITY AND LEVEL-OF-SERVICE                                    Page-3
-----------------------------------------------------------------------

                      POTEN-    ACTUAL
              FLOW-   TIAL      MOVEMENT    SHARED       RESERVE
              RATE    CAPACITY  CAPACITY    CAPACITY     CAPACITY
MOVEMENT      v(pcph) c (pcph)  c (pcph)    c  (pcph)    c = c   - v  LOS
                       p         M           SH           R   SH
              ------- --------  ---------  ------------ ------------  ---

MINOR STREET

  WB LEFT        0       874       848    >        848 >        848 >  A
     THROUGH     0       959       935    >    0   935 >    0   935 >  A
     RIGHT       0      1000      1000    >       1000 >       1000 >  A

MINOR STREET

  EB LEFT       98       880       858    >        858 >        760 >  A
     THROUGH     4       958       934    >  865   934 >  760   930 >A A
     RIGHT       4      1000      1000    >       1000 >        996 >  A

MAJOR STREET

  NB LEFT        0      1000      1000            1000         1000    A
  SB LEFT       42      1000      1000            1000          958    A
```

```
        1985 HCM:  UNSIGNALIZED INTERSECTIONS                    Page-1
        ****************************************************************
                                                          L5BLD
        IDENTIFYING INFORMATION
        ____________________________  _________________________________

        AVERAGE RUNNING SPEED, MAJOR STREET.............. 30

        PEAK HOUR FACTOR................................. .9

        AREA POPULATION.................................. 10000

        NAME OF THE EAST/WEST STREET..................... I-10 WESTBOUND RAMPS

        NAME OF THE NORTH/SOUTH STREET...................
DESERT CENTER RICE ROAD

        NAME OF THE ANALYST.............................. CDW

        DATE OF THE ANALYSIS (mm/dd/yy).................. 2/26/90

        TIME PERIOD ANALYZED............................. DAILY PEAK HOUR

        OTHER INFORMATION: 1995 BUILD CONDITIONS

        INTERSECTION TYPE AND CONTROL
        _______________________________________________________________

        INTERSECTION TYPE: 4-LEG

        MAJOR STREET DIRECTION: NORTH/SOUTH

        CONTROL TYPE EASTBOUND: STOP SIGN

        CONTROL TYPE WESTBOUND: STOP SIGN


        TRAFFIC VOLUMES
        _______________________________________________________________

                  EB    WB    NB    SB
                 ----  ----  ----  ----
        LEFT       0     0     1     0

        THRU       0     0    73    33

        RIGHT      0    25     0    98


        NUMBER OF LANES AND LANE USAGE
        _______________________________________________________________

                     EB        WB        NB        SB
                   -------   -------   -------   -------
        LANES         1         1         1         1

        LANE USAGE   LTR       LTR
```

L5BLD

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	1	27	0
WESTBOUND	1	27	0
NORTHBOUND	1	27	0
SOUTHBOUND	1	27	0

CRITICAL GAPS

	TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS				
WB	5.50	5.50	0.00	5.50
EB	5.50	5.50	0.00	5.50
MAJOR LEFTS				
SB	5.00	5.00	0.00	5.00
NB	5.00	5.00	0.00	5.00
MINOR THROUGHS				
WB	6.00	6.00	0.00	6.00
EB	6.00	6.00	0.00	6.00
MINOR LEFTS				
WB	6.50	6.50	0.00	6.50
EB	6.50	6.50	0.00	6.50

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